DEPARTMENT OF THE INTERIOR

DRAFT

ENVIRONMENTAL STATEMENT

Proposed

WILDERNESS AREAS

HAWAII VOLCANOES NATIONAL PARK

HAWAII

DES 73-68

Prepared by

Western Region
National Park Service
Department of the Interior

ACTING Regional Director, Western Region

OCT 26 1973

EXPLANATION OF ACREAGE DISCREPANCIES

BETWEEN THE MASTER PLAN AND WILDERNESS STUDY

The gross acreage of Hawaii Volcanoes National Park listed in the wilderness study includes the acreage of the Olaa Forest tract, whereas the master plan does not include this acreage in the gross park acreage.

Due to recent land acquisitions, the current non-federal acreage is 9,882.67 acres, as shown in the master plan.

WILDERNESS AREAS

HAWAII VOLCANOES NATIONAL PARK

ENVIRONMENTAL STATEMENT

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SUMMARY

(X) Draft ( ) Final Environmental Statement

Department of the Interior, National Park Service, Western Region

1. Type of Action: ( ) Administrative (X) Legislative

2. Description of Action: The National Park Service proposes that 123,100 acres of Hawaii Volcanoes National Park be designated as wilderness. An additional 7,850 acres in Units 2 and 3 are proposed as potential wilderness additions to be added to wilderness by the Secretary of the Interior when they qualify under the terms of the Wilderness Act.

3. Summary of Environmental Impact and Adverse Environmental Effects: This wilderness proposal will preserve diverse segments of the Island of Hawaii in an undeveloped state--from the 13,600-foot summit of Mauna Loa to the Puna and Kau Coasts, and landscape ranging from barren lava to dense tropical forests and dry coastal reaches with numerous archeological sites. Dominant impacts are scientific, cultural, and social in that much of the park will be retained in an undeveloped state, thereby preserving its unique resources while still providing for public use. Other effects include strict control of research projects, increased management and research costs, and eventual rationing of recreation use.

4. Alternatives Considered: A. No Wilderness Designation. B. Inclusion of Concentrated Research Area in Upper Kau Desert. C. Inclusion of Portions of the Kalapana Extension. D. Designation of the Entire Chain of Craters and Adjacent Palis Mauka as Wilderness. E. Exclusion of a Coastal Strip from Wilderness. F. Exclusion of the Jeep Road to the Summit of Mauna Loa. G. Inclusion of the Hilina Pali Road Corridor in Wilderness.

5. Comments Have Been Requested From the Following:

Advisory Council on Historic Preservation
Department of Agriculture
  Soil Conservation Service
Department of Defense
  U.S. Army
Department of the Interior
  Bureau of Indian Affairs
  Bureau of Mines
  Bureau of Land Management
  Bureau of Outdoor Recreation
  Bureau of Reclamation
  Bureau of Sport Fisheries & Wildlife
  Geological Survey
Department of Transportation
Environmental Protection Agency
State of Hawaii Clearinghouse
  State Historic Preservation Officer
Metropolitan Clearinghouse
Audubon Society
Bishop Museum
Congress of the Hawaiian People
Life of the Land
Sierra Club
Society of American Foresters
The Hawaiians
The Nature Conservancy
University of Hawaii
Wilderness Society

6. Date Made Available to CEQ and the Public: OCT 26 1973

DESCRIPTION OF THE PROPOSAL

Hawaii Volcanoes National Park lies on the southeast slopes of the Island of Hawaii, largest of the Hawaiian chain. Contained within the park's current boundaries is a combination of geological, biological, and historic resources. Mauna Loa and Kilauea, two of the most active volcanoes in the world are the two dominant geographical features and the main attraction for visitors. But there are also significant endemic communities of plants and animals on the slopes of these volcanoes that require particular care in management and planning to guarantee that they will survive competition with introduced species and continue to be available as part of the Nation's cultural heritage. Further, volcanic research, with facilities necessary throughout the park, is equal in importance to the conservation/public use aspects. The research programs, the physical landforms, special management programs, unique legal provisions, and projected visitor-use plans all control the size and configuration of wild lands suitable for consideration as wilderness.

The master plan, prepared in conjunction with the wilderness proposal, defines appropriate uses and proposes that additional lands (approximately 105,400 acres) be added to the authorized park boundary to further the purposes of the park. This wilderness proposal, however, includes only lands within the current authorized boundary. The foremost attraction within the park will continue to be Kilauea Caldera where the visitor will be able to view, at close range, the wealth of volcanic features and the eruptions that occur there. When new eruptions occur elsewhere, such as the current one at Mauna Ulu, they too will be interpreted, and, if possible, access afforded.

For the visitor who travels by private car and wishes to spend more time, additional attractions will invite his attention: the Olaa fern forest, vast primitive areas around Mauna Loa's summit, remote coastal stretches, and many historical, archeological, and cultural exhibits of Hawaii's provocative past.

Activities will include fishing, nature walks, camping, hiking, picnicking, and pleasure driving. Campgrounds and hotel accommodations will continue to be provided for those few visitors who remain in the park for more than one day.

Research and management of resources are more important here than perhaps at any other unit in the National Park System. This is not only because of the legislative mandate concerning volcanic research, but also because of the great problems encountered in maintaining a stable ecosystem when competing exotic plant and animal species wreak destruction on the many endemic populations that exist nowhere else in the world.

Regarding the general pattern of use, there will be little change as a result of master plan proposals. The major change will come about as visitation increases, as facilities are improved, and as interpretation encourages the visitor to remain longer in the park to see the remote areas that have been enjoyed by only a few visitors in the past. Three use zones have been identified as a framework for the manner and intensity of visitor use as well as the management of resources.

The primary use zone encompasses those attractions that are most popular with visitors, namely Kilauea Volcano, the Kalapana Coast, and the Chain of Craters Road that joins them. Time is limited, and most visits to this zone are strictly structured to adhere to a bus tour schedule.

The wilderness threshold zone will help stimulate interest in the intimate details of the park environment. Visitors to this zone will be willing to spend more time and energy to explore and enjoy inherent resources. Also, they will be almost entirely local island residents and off-island visitors who rent cars. Access will be on low standard roads and short trails. And this zone will serve as an introduction to the large units of park backcountry that lie beyond road termini and trailheads.

The backcountry is the largest zone and, as with most other parks, will require the lightest use in regard to visitors per acre. Visitors here will have considerable time and energy to enjoy long hikes and camp overnight in order to see and appreciate the park's extensive roadless areas. It is this zone that encompasses those lands considered suitable for wilderness. Thus, in accordance with Public Law 88-577, dated September 3, 1964, it is proposed to designate four wilderness units, totaling 123,100 acres, within the existing boundaries of Hawaii Volcanoes National Park. An additional 7,850 acres in Units 2 and 3 are proposed for designation as potential wilderness additions. These lands are also within the authorized boundary but are now in private ownership. They will be added to the wilderness by the Secretary of the Interior when the Federal Government obtains title to the land. The proposal is further discussed in the report, "Wilderness Study, Hawaii Volcanoes National Park," prepared by the National Park Service, July 1973.

In addition, it is proposed that there be four special provisions included in the designating legislation to allow the latitude necessary for management to adequately cope with the park's unique resource problems.

1. Since there is no surface water in the backcountry available for visitor use, it is proposed that a rain catchment system associated with the existing and proposed shelters be allowed in the Hawaii Volcanoes wilderness.

2. Volcanic research is equal in importance to visitor use and the minimum tools to accomplish this research include various instruments and access by helicopter for transport and servicing. It is proposed that this operation be continued within Hawaii Volcanoes wilderness units. Included in this provision will be permission for four-wheel-drive vehicles to drive to the summit of Mauna Loa on the north side for research purposes only.

3. Two potential wilderness additions are proposed. One of about 2,000 acres and the second about 5,800 acres. It is recommended that a special provision provide the Secretary of the Interior with the authority to designate these lands as wilderness when he deems they qualify.

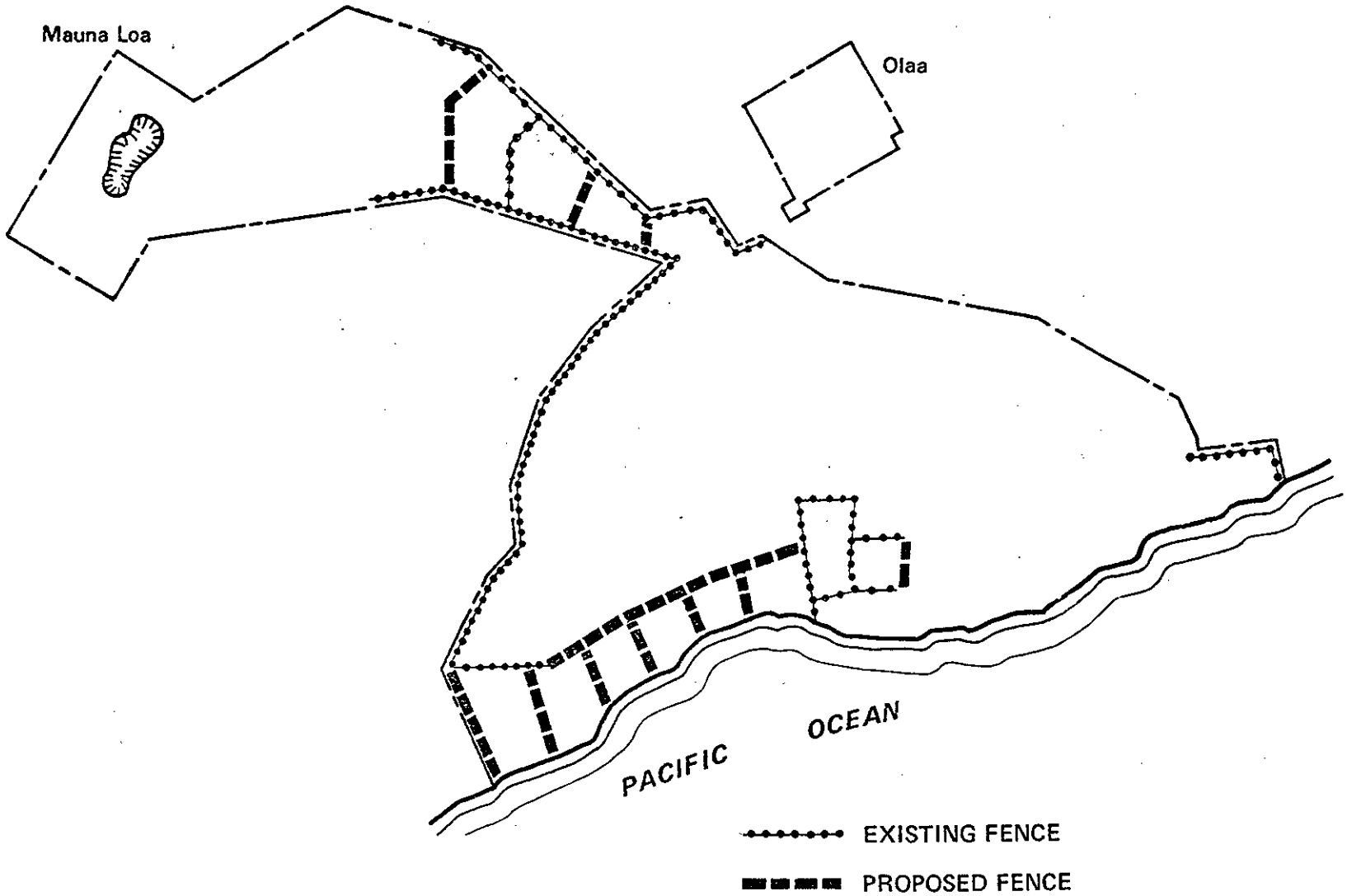
4. As proposed in the master plan and resources management plan, certain minimum tools such as fencing are considered necessary to protect native populations from feral animals, particularly goats. The proposed special provision will provide for continuation of whatever fence system is considered necessary to control feral goats. The existing fences and current proposal for additional fences are shown on the accompanying map.

The wilderness proposal for Hawaii Volcanoes will preserve approximately 62 percent of the park's acreage unaltered by the hand of man. Here, the visitor will have the opportunity to experience a sense of solitude in a variety of landscapes that range from barren high-elevation lava fields to dense rain forests and extensive tropical coastal regions. Moreover, assuming that the special provisions are allowed, disappearing species of Hawaiian plants and birds will be afforded an excellent opportunity for survival. And these, too, will be available for both visitor enjoyment and for scientific research. The four proposed wilderness units are delineated on the accompanying map as follows:

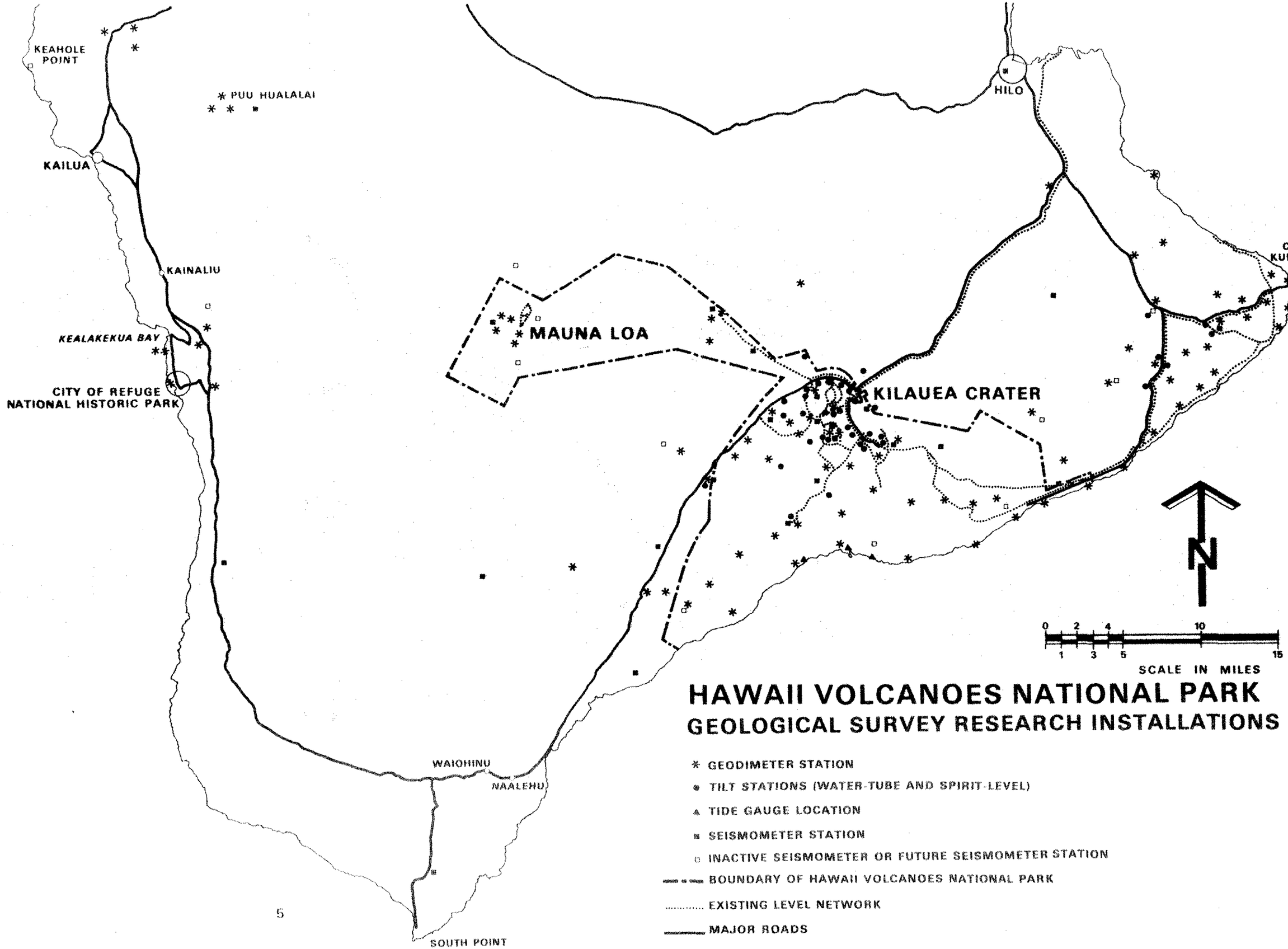
UNIT 1

This largest of the proposed units, 58,500 acres, lies at the summit and upper slopes of Mauna Loa; consists mostly of barren land flows, craters, and cinder cones; and is subject to periodic volcanic activity. It will preserve the entire Mokuaweoweo Caldera and sections of the two main rift zones in wilderness. Because of the high elevation (4,700 to 13,680 feet) and the character of the landscape, the forces of nature predominate almost entirely. Thus, visitors will be afforded an experience of primeval solitude and scientists an undisturbed outdoor laboratory.

On the north, west and south sides, the proposed wilderness line lies along the park boundary. Adjacent lands outside the park are almost all unvegetated lava flows. On the east, the proposed boundary extends


Mauna Loa
Olaa
PACIFIC OCEAN
EXISTING FENCE
PROPOSED FENCE

GOAT FENCES



HAWAII VOLCANOES NATIONAL PARK
GEOLOGICAL SURVEY RESEARCH INSTALLATIONS

- * GEODIMETER STATION
- ⊛ TILT STATIONS (WATER-TUBE AND SPIRIT-LEVEL)
- ▲ TIDE GAUGE LOCATION
- ▪ SEISMOMETER STATION
- ▫ INACTIVE SEISMOMETER OR FUTURE SEISMOMETER STATION
- BOUNDARY OF HAWAII VOLCANOES NATIONAL PARK
- ..... EXISTING LEVEL NETWORK
- ——— MAJOR ROADS

down the Mauna Loa Strip to slightly below the paved Mauna Loa Strip road, but excluding it and an existing powerline at an elevation of about 4,700 feet. Here, the adjacent land inside the park is designated as a light-use wilderness threshold zone. Outside the boundary is forest and grazing land. Visitors wishing to ascend Mauna Loa from the north side will leave their vehicles at a parking area outside the current park boundaries and below the Mauna Loa weather observatory.

Four cabins will be retained in this unit. These are primarily for ranger patrol use, but will be open for visitors in this high-elevation area as they will encourage camping in specific controlled locations and provide needed shelter. Two of these shelters, at Red Hill and Mauna Loa's summit, will be retained in their present location. Two others will be relocated to more adequately serve visitor and management needs.

UNIT 2

This is an area of 56,900 acres, encompassing much of the Kau Desert coastal area and most of the roadless area between the coast and palis (cliffs). The shoreline, thus protected, is the longest stretch of undeveloped coastline in the Hawaiian Islands. From the mauka (inland) palis are superb views of ocean, coastal plains, fault scarps, and broad open areas where unique species of endemic plants and animals still survive.

With regard to visitor use, this is the most attractive part of the backcountry, though use is still light. An extensive trail system exists, both along the palis and on the coast. Halape is a major destination area because there is shelter, good fishing, a coconut grove, and some fresh water. The latter two are currently not available elsewhere along the coastline within wilderness Unit 2. Two additional catchments do exist, however, within the roadless area east of the proposed boundary at Keauhou Landing and Apua Point. There is also an existing shelter inland at Pepeiau used by management as a patrol cabin, but also open to visitors. It is within proposed wilderness Unit 2.

The proposed wilderness follows the northwestern park boundary from the coast to 1/4 mile south of State Route 11, but excludes 2,050 acres of private land in the southwest corner as a potential wilderness addition. Adjacent land outside the boundary is used for grazing and agriculture. From State Route 11, the line runs generally southeast across the Kau Desert to Puu Ohale excluding those lands southwest of Kilauea Caldera, where there is little or no visitor use but where intensive research activities are undertaken by the U.S. Geological Survey. Their facilities include jeep roads and seismic lines, tilt stations, seismometers, and geodimeter stations.

The line then excludes the Hilina Pali road, a major visitor and management access route to the backcountry area below the top of Hilina Pali and the coast. It then continues southeasterly, crossing the former Ainahou Ranch, to the Kalapana Extension boundary. From there, the line follows the line of the Kalapana Extension to the coast and southwest along the coast to the point of beginning. Kalapana Extension land, although much of it is roadless, has been excluded from the proposal because of the 1938 act. That act authorized this extension, but also enabled the Secretary of the Interior to lease homesites to Hawaiians, under certain conditions.

To encourage additional backcountry use of the coastal area, three additional backcountry rain catchments are proposed. These are considered as the necessary minimal shelter and water for backcountry users in this harsh dry environment.

UNIT 3

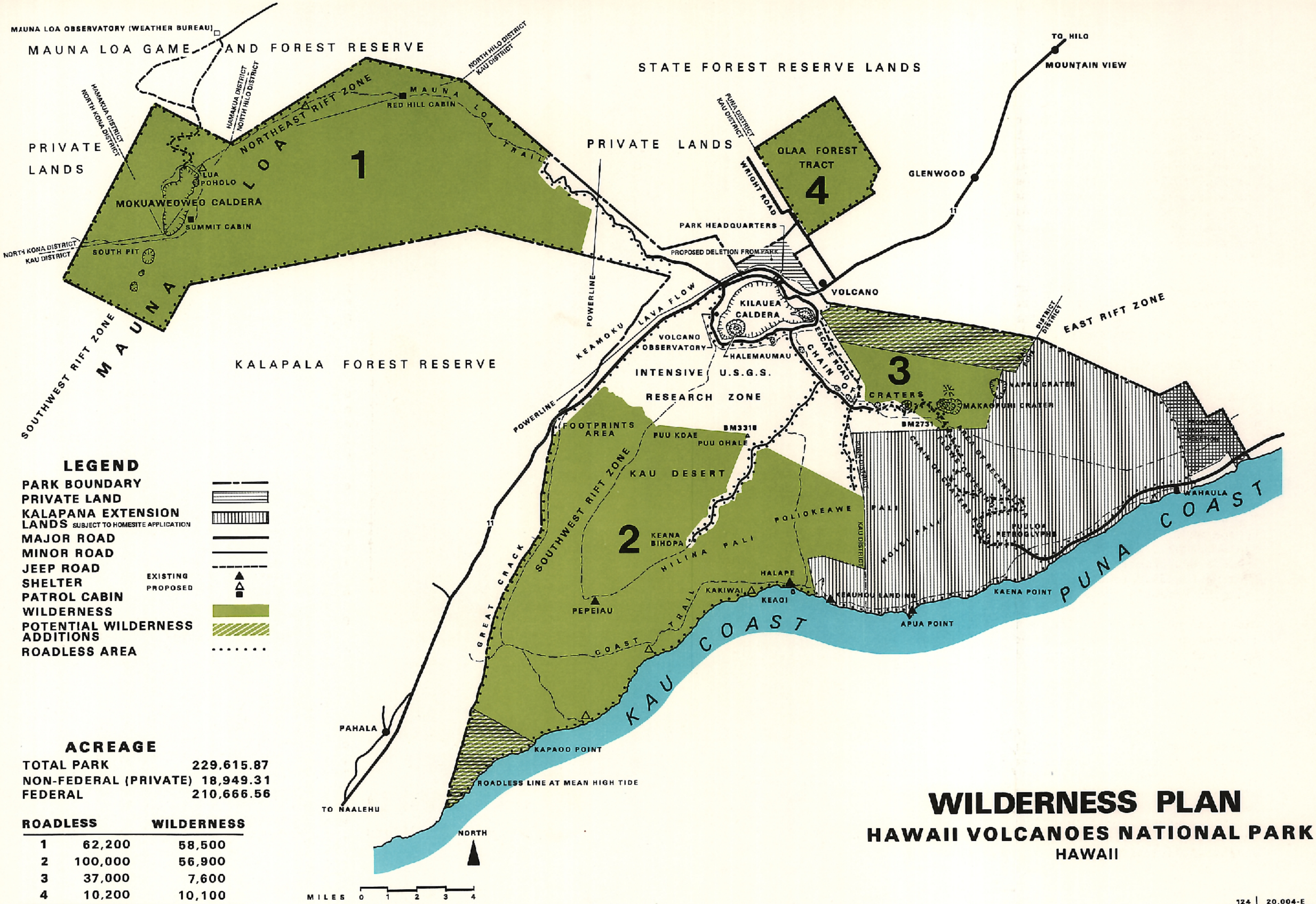
This unit, about 7,600 acres, includes portions of the Chain of Craters along Kilauea's southwest rift zone and a native ohia/fern forest. This is a particularly dynamic landscape where frequent volcanic eruptions destroy whole sections of native forest. But here regeneration of vegetation is more rapid because of heavy rainfall. It is also adjacent to one of the park's most frequently visited areas outside wilderness, including Kilauea Caldera and portions of the Chain of Craters.

The proposed northeastern boundary follows a line parallel to and approximately 7,000 feet from the park's northeastern boundary. On the southwest, it generally follows along the Hilo side of the Chain of Craters but crosses that physical feature near Alae Crater. The northwest and southwest boundaries follow district boundaries and the Kalapana Extension boundary, respectively.

Along the northeastern side, a 5,800-acre tract of private land is proposed as a potential wilderness addition. Land outside the boundary to the northeast is also covered with ohia/fern forest and little used at this time.

UNIT 4

This is the Olaa Forest Tract, and will include 10,100 acres of the finest example of native Hawaiian ohia/fern forest. The wilderness proposal includes the entire tract, except for the small detached unit on the west side of Wright Road. This will be utilized for public use with a parking area and nature trail. The area proposed as wilderness is also proposed as a research natural area to be perpetuated as a native ecosystem for scientific research with no development. It is surrounded by similar forest lands, some of which have been logged, farmed and/or subdivided.



LEGEND

- PARK BOUNDARY
- PRIVATE LAND
- KALAPANA EXTENSION LANDS SUBJECT TO HOMESITE APPLICATION
- MAJOR ROAD
- MINOR ROAD
- JEEP ROAD
- SHELTER — EXISTING / PROPOSED
- PATROL CABIN
- WILDERNESS
- POTENTIAL WILDERNESS ADDITIONS
- ROADLESS AREA

ACREAGE

TOTAL PARK	229,615.87
NON-FEDERAL (PRIVATE)	18,949.31
FEDERAL	210,666.56

	ROADLESS	WILDERNESS
1	62,200	58,500
2	100,000	56,900
3	37,000	7,600
4	10,200	10,100
TOTAL	209,400	123,100

POTENTIAL WILDERNESS ADDITIONS 7,850 ACRES

WILDERNESS PLAN

HAWAII VOLCANOES NATIONAL PARK

HAWAII

PRELIMINARY-SUBJECT TO CHANGE

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Although the tract is Federal land and under protective custody of the National Park Service, it does not have official national park status. Under the terms of the 1935 act to add lands to the park, it was stipulated that all such lands be contiguous to the existing boundary. Since it is not now proposed to acquire the intervening lands, legislation is being sought to add this tract to the park.

RELATED PROPOSALS

Other than lands leased to the military, there are no major Federal parcels on the Island of Hawaii and thus no other wilderness proposals. Large undeveloped sections of private and State land do exist around Mauna Loa, Hualalai, Mauna Kea, and in the Kohala Mountains at the north end of the island. These are almost entirely high-elevation lands either barren or sparsely vegetated, except for the heavily forested windward sections of the Kohala Mountains and the adjacent northern Hamakua Coast.

There are two other proposed wilderness areas in the State. One in Haleakala National Park on Maui and one that includes most of the Hawaiian Islands National Wildlife Refuge, between Niihau and the Island of Midway to the northwest.

DESCRIPTION OF THE ENVIRONMENT

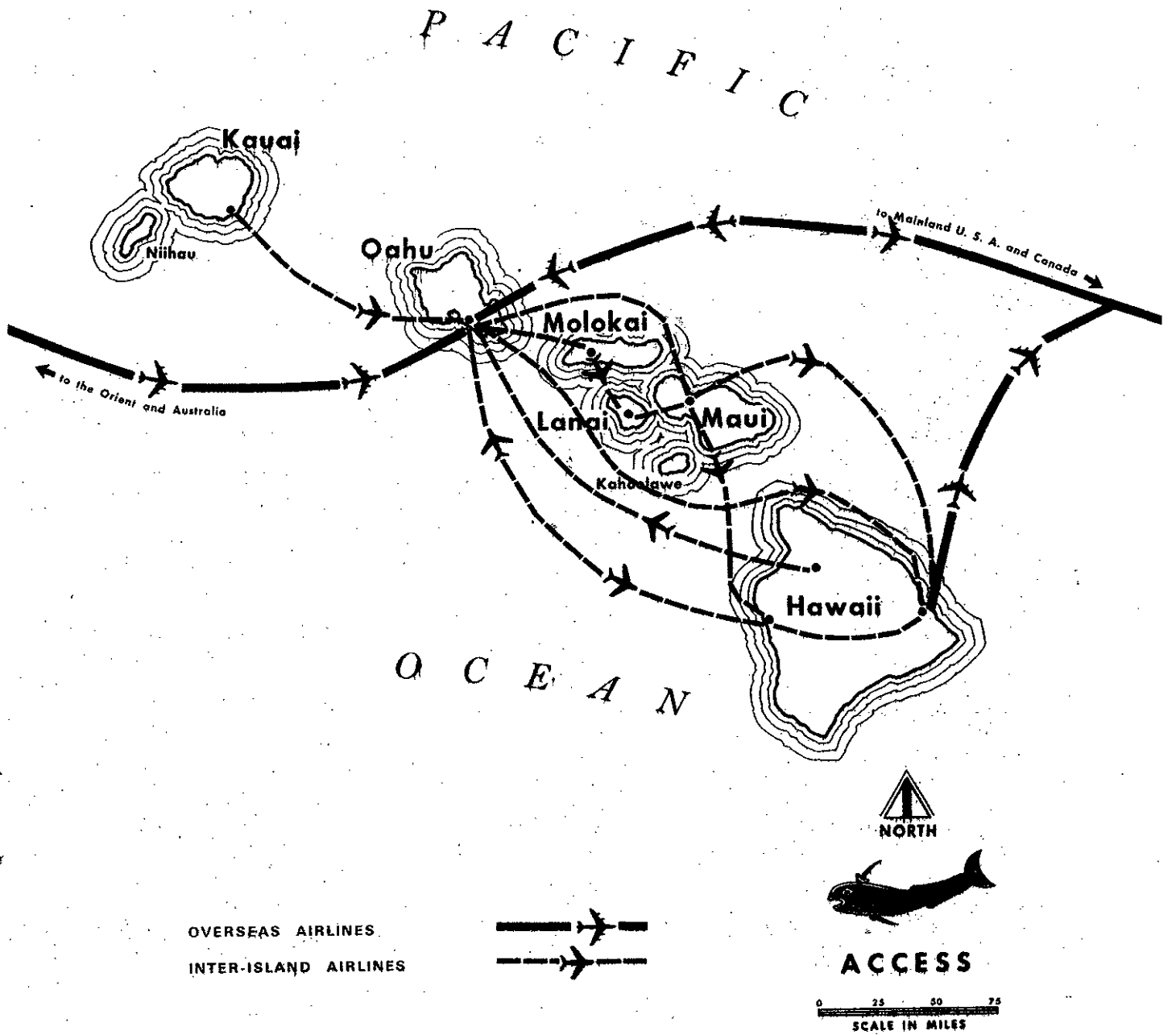
THE REGION

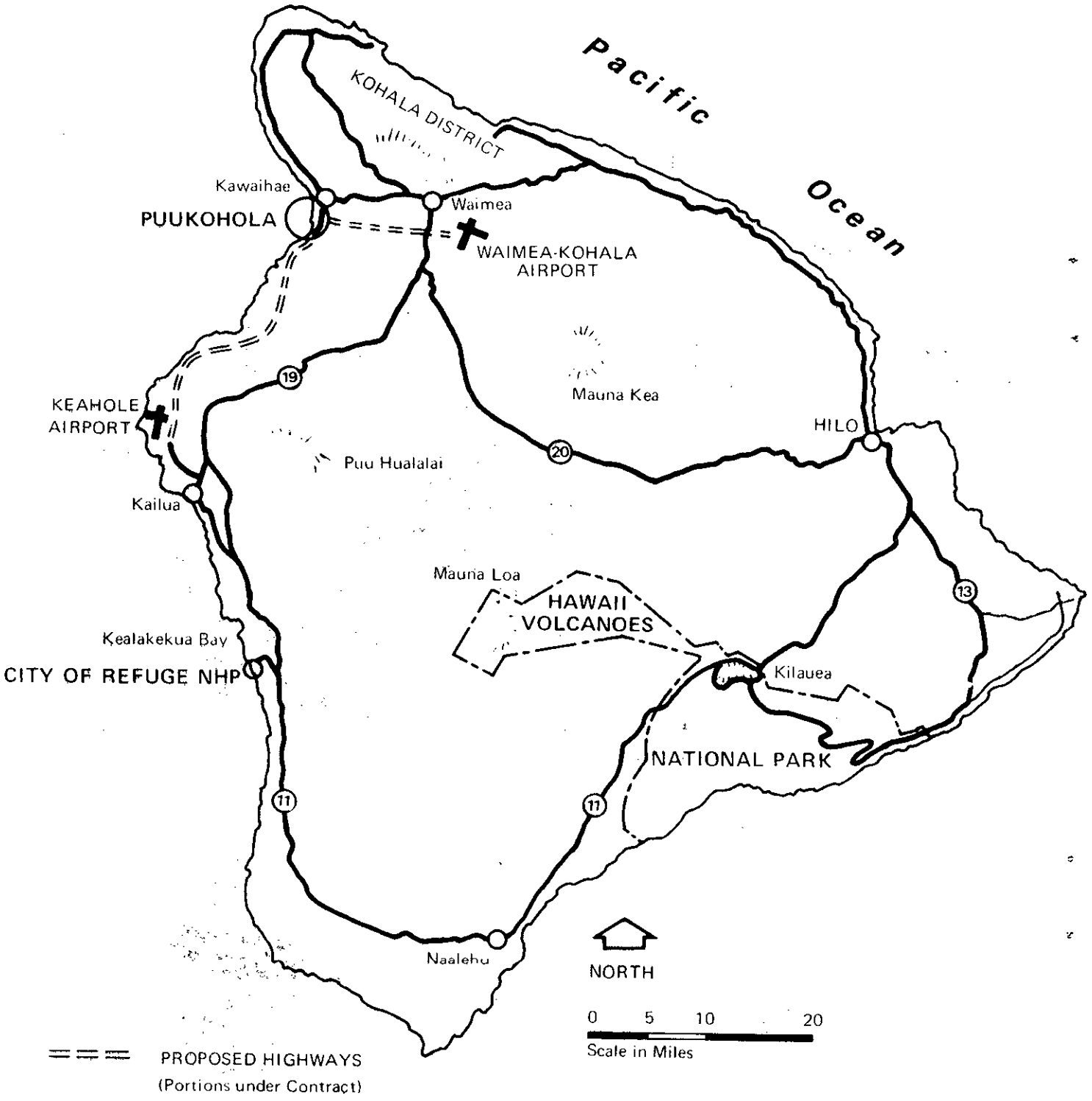
The Island of Hawaii is a varied land of seasonally snowcapped mountains, active volcanoes, broad expanses of sugarcane, large cattle ranches, dense tropical rain forests, and rough lava coastline dotted infrequently by small beaches. This is the largest of all the islands in the 2,000-mile-long Hawaiian chain and is locally called the Big Island. Indeed, its land area (4,021 square miles) is larger than all the other islands combined. Further, it is a growing island that even now is being increased by lava flows from Kilauea and Mauna Loa, among the world's most active volcanoes.

Principal access to the State and between islands is by air. Jetliners arriving from North America, Australia and many points in the Orient make Honolulu one of the world's busiest airports. And in 1967, direct air service between the mainland and Hilo, the Big Island's main population center, was begun.

Inter-island airlines make about 30 scheduled flights daily to the Big Island terminals of Hilo, Waimea, and Kona. Visitors or businessmen with limited time may arrive and leave the same day--from a different airport if they desire. The Big Island is also included on one-day air tours originating in Honolulu which permit short stops and provide excellent aerial coverage with in-flight informational talks. By contrast, sea travel is negligible with regard to passenger travel and now only carries freight. Intra-island circulation is by ground and air transportation centered mainly around Hilo, Waimea, and Kona. Cars and pickup campers may be rented. Commercial tours are available by bus and tour car, and air taxis serve both major airports and minor airstrips.

The State of Hawaii ranks 15th among the 50 states in population density (approximately 100 persons per square mile), but the Island of Hawaii is still sparsely populated with only 15 persons per square mile. Moreover, even though the State's population has steadily increased, (500,000 in 1950; 632,000 in 1960; and 770,000 in 1968), this has taken place almost entirely on heavily urbanized Oahu. By contrast, Hawaii's population has, until recently, been decreasing because of agricultural mechanization and the loss of some industries such as pineapple production. The 1950 population of 68,350 decreased to 61,332 in 1960. It appears, however, that this decline is over and a growth period is forecast, probably due to the rapidly expanding tourist industry. Population in 1968 was 63,500, and the forecast is for about 69,500 by 1980. The major population concentration is in the


P A C I F I C
Kauai
Niihau
Oahu
Molokai
Lanai
Maui
Kahoolawe
Hawaii
to Mainland U. S. A. and Canada
to the Orient and Australia
O C E A N
NORTH
OVERSEAS AIRLINES
INTER-ISLAND AIRLINES
ACCESS
0 25 50 75
SCALE IN MILES



Island of Hawaii

Hilo vicinity, which contains about half the island's total residents. The districts of north and south Kona are a secondary concentration with the remainder in small towns and farming areas.

Land-use patterns are closely related to the island environment which varies widely in type and desirability. The gently sloping topography is dictated by the innumerable lava flows that have erupted from the five volcanoes which created the island. The exception to this landform is the Hamakua Coast where erosion and wave action have formed deep valleys and steep coastal palis reminiscent of the older islands to the northwest.

Climate is largely the product of the prevailing trade winds, high mountain masses, and elevation. The annual temperature averages a balmy 75 degree Fahrenheit at sea level, but freezing winter weather is to be expected on the snowy summits of Mauna Loa and Mauna Kea where elevations exceed 13,000 feet above sea level. Trade winds are intercepted on Hawaii's northeastern slopes dropping 200 to 300 inches of rain per year and providing an ideal environment for humid rain forests and commercial sugarcane fields. By contrast, the southern Kohala Coast receives as little as 15 inches of rain a year and presents a desert appearance with cactus-dotted rangeland. The Kona area, also protected from the trade winds, is characterized by sunny mornings with cloudy and rainy afternoons. Most of the afternoon rains fall on higher slopes, leaving the shore areas pleasant.

Sugar production continues to be the island's chief agricultural industry. Other sources of the local economy include grazing and diversified agriculture. The only coffee industry in the United States and the world's largest commercial orchid-growing center are located here. Production for local use and export of papayas, macadamia nuts, and tropical flowers is rapidly expanding. Still, large areas on the island are in undeveloped forests and barren lava fields. Much of the latter is at higher elevations around the upper slopes of Mauna Loa and Mauna Kea.

Under the State's "Greenbelt" Law, all land in Hawaii is classified into four major land-use districts--urban, rural, agricultural, and conservation--as determined by the State Land-Use Commission. This law provides some assurance that land will be used for its best purpose and that development will be compatible with the uses permitted within the four categories. The counties regulate internal zoning in the urban, agricultural, and rural districts; the State Department of Land and Natural Resources regulates use in the conservation districts. Outdoor recreation and the preservation of natural resources and cultural values are considered in administering the State Land-Use Law. The law states that, "Conservation districts shall include areas

necessary for protecting watershed and water resources; preserving scenic areas; providing park lands, wilderness and beach reserves; conserving endemic plants, fish, and wildlife; preventing floods and soil erosion; forestry and other related activities; and other permitted uses not detrimental to a multiple use conservation concept."

The last decade has seen the tourist industry and associated recreation uses emerge and become a major factor in the island's land use, and the abundant recreational opportunities are still largely undeveloped. Its 266 miles of coastline, varied topography--much of it barren lava--extending from the sea to nearly 14,000 feet above sea level, and vast areas of wild lands comprise a raw resource adaptable for swimming, surfing, fishing, boating, hiking, horseback riding, hunting, camping, and picnicking. Coastal-oriented recreation holds the greatest appeal for visitors, but island residents are interested also in other activities. Some even seek Mauna Kea's snowy summit for skiing. Paradoxically, there are few swimming beaches and most of these are on the west coast between Kawaihae and Kailua. But sand is not essential for swimming, and rocky coves and bays offer excellent possibilities for snorkeling and scuba diving. The Big Island is also rich in historic sites involving the periods before and after contact with European civilization.

A complex of significant resources on Hawaii are now managed by the National Park Service. The two primary attractions are Kilauea Volcano, a natural phenomenon, and City of Refuge--a window into prehistoric Hawaii. Puukohola Heiau, associated with King Kamehameha's rise to power in the late 18th century, was authorized as a new unit in the National Park System in the summer of 1972. Many other historical, archeological, scenic, and recreation resources on the island are dedicated to public use by the State and county park systems, while others are being developed by the expanding tourist industry.

THE PARK

Hawaii Volcanoes National Park contains all the land now proposed for wilderness by the Federal Government on the Island of Hawaii. The park occupies the summit and part of the southeast flank of Mauna Loa Volcano and almost a third of Kilauea Volcano. These broad, flat volcanic domes rarely explode, but erupt generally from calderas (huge collapsed depressions in the summit) or along the rift zones on the flanks of the volcanoes, after sending up fountains of molten lava hundreds of feet into the air. Huge volumes of lava also emerge from major vents to completely destroy plant communities and manmade developments. They create new topographic formations and flow into the ocean, sometimes actually adding new land to the island.

Geology

Kilauea Volcano's two main rift zones are defined by large pit craters, cracks, and cinder zones. The southeast rift or Chain of Craters has been particularly active in recent years. Kilauea's seaward side exhibits great fault scarps contrasting with its other gentler slopes. Lava flows, devastated areas, and steam cracks show old and new activity, and steam issues from the ground at many places in and around the Kilauea Caldera and along the Chain of Craters. Sections of the Chain of Craters and the southeast rift zone are in proposed wilderness Unit 3 and about half of the southwest rift zone is in Unit 2. Kilauea Caldera and the upper portions of both rift zones are excluded.

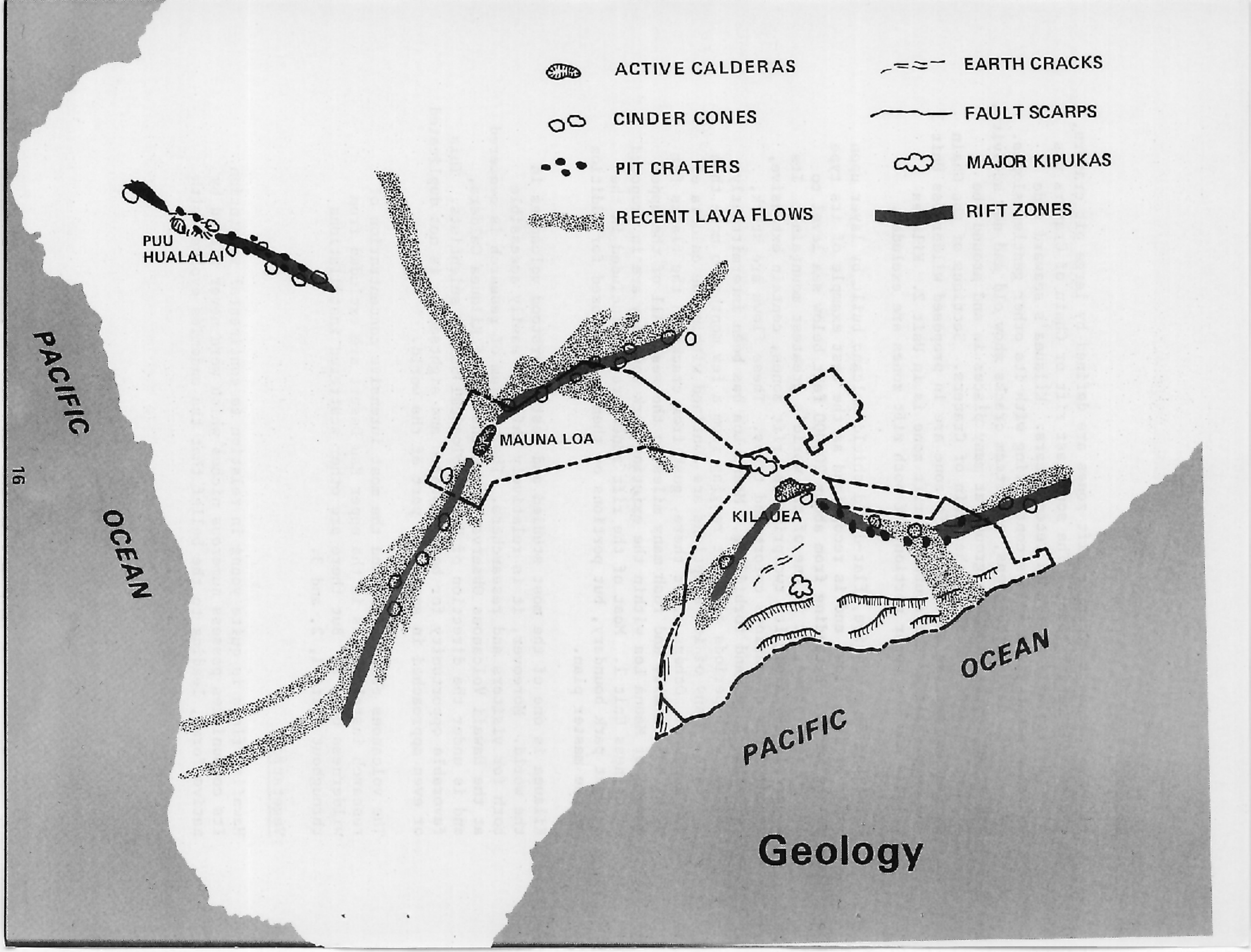
Mauna Loa is a massive, flat-domed shield volcano built by layer upon layer of lava flows and is recognized as the best example of its type in the world. Extending from about 20,000 feet below sea level to 13,680 feet above, it is one of the world's greatest mountains. Its upper slopes, along its two principal rift zones, contain extensive, recent flows of various colors and types. These flows are stark, colorful, bare, and forbidding. Mauna Loa has been intermittently active, with periods of quiet ranging from a few months to more than a decade. Many of its eruptions are confined within the caldera of Mokuaweoweo. Others start there, gush from cracks in the flanks far below the summit, and rush many miles to the sea. All of the upper slopes of Mauna Loa within the existing park boundary are in proposed wilderness Unit 1. Most of the rift zones are not included in the current park boundary, but portions of them are proposed for addition in the master plan.

Kilauea is one of the most studied and best understood volcanoes in the world. Moreover, it is relatively safe and easily accessible both for visitors and researchers. The program of research is centered at the Hawaii Volcanoes Observatory on the rim of Kilauea Caldera, and is under the direction of U.S. Geological Survey scientists. This favorable opportunity for both research and sightseeing is not duplicated or even approached in any other part of the world.

The volcanoes observatory and the most intensive concentration of research installations in the upper Kau Desert are excluded from wilderness Unit 2. But there are other scattered installations throughout Units 1, 2, and 3.

Vegetation

Hawaiian flora is quite young in relation to continental vegetation. Its communities possess numerous niches which were never filled by native forms, leading to the belief that the endemics evolved with


ACTIVE CALDERAS
CINDER CONES
PIT CRATERS
RECENT LAVA FLOWS
EARTH CRACKS
FAULT SCARPS
MAJOR KIPUKAS
RIFT ZONES
PUU
HUALALAI
MAUNA LOA
KILAUEA
PACIFIC
OCEAN
PACIFIC
OCEAN

Geology

little competition. This made the Hawaiian vegetation units more vulnerable to structural and composition change when highly competitive species were introduced.

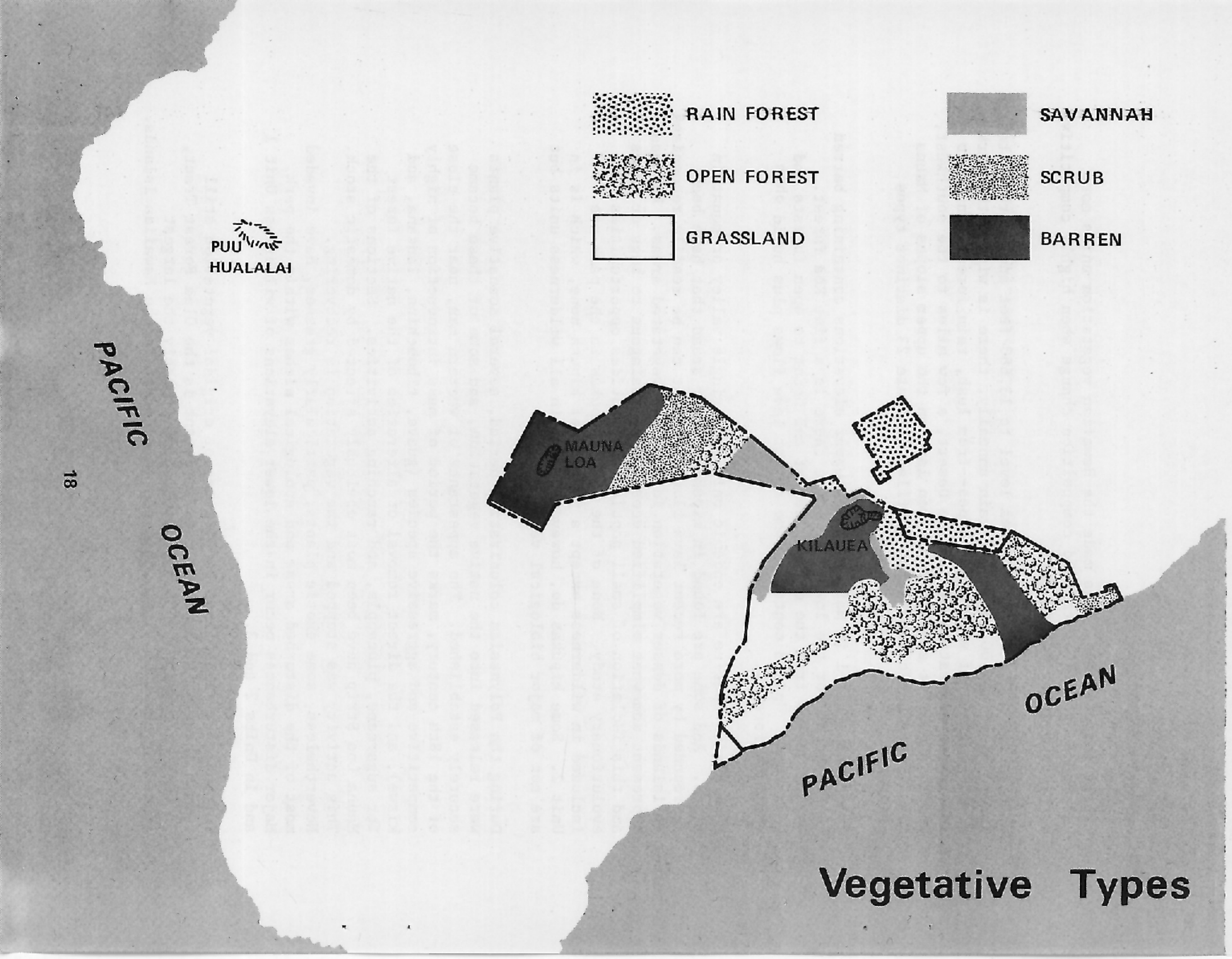
With an elevation range from sea level to 13,680 feet and a precipitation spread of 15 to 100 inches of rain annually, there is within the park a wide variety of vegetative types--from lush, rain forest jungle to the sparse vegetation of the Kau Desert, a few miles to the southwest, and to the great expanse of barren lava on the upper slopes of Mauna Loa. Topographic vegetation profiles indicate 23 distinct types present.

Wilderness Unit 1 is mainly in the upper elevations containing barren lava, except for the lower end where there is a fine Koa forest. Unit 2 varies from the dry Kau Desert and Coast to open forests and grassland. Unit 3 contains some recent lava flows plus humid ohia and fern forests.

Some native species are endemic only to a single valley or mountain slope. And some are found in kipukas, older areas that have been surrounded by more recent lava flows and that can be readily recognized as islands of denser vegetation in sparsely vegetated areas. Kipukas represent somewhat simplified ecosystems, analagous to bogs or lakes and this isolation of small populations provides opportunities for evolutionary study. None of the major kipukas in the park are included in wilderness except a portion of kipuka nene, which is in Unit 2. Some kipukas do, however, occur in all wilderness units but are not of major biological value.

During the Polynesian colonization period, several nonnative plants were released into the native vegetation, and some of these became securely established. The appearance of western man, near the close of the 18th century, marks the period of mass introduction of highly competitive and aggressive species (guava, tibouchina, lantana, and kiawe), and the direct removal or alteration of the native forest for sugarcane, pineapple, and ranching activities. Sections of the Mauna Loa Strip have been most obviously affected by domestic stock. This activity was stopped and the vegetation is recovering. Nevertheless, some exotic plants, particularly grasses, have invaded most of the disturbed areas and ecological niches within the park. Major disturbances occur in the lower elevations of wilderness Unit 1 and in Units 2 and 3.

Fortunately, significant large areas of original vegetation still remain intact. Perhaps the most important is the Olaa Forest Tract, an area of nearly 10,000 acres, which is probably the largest remaining tract of virgin ohia and fern forest in the Hawaiian Islands.



Vegetative Types

This tract has been recognized by the Society of American Foresters as a "natural area," the best example of this type. Nearly all of this tract is proposed as wilderness Unit 4.

At Bird Park, many rare native plants have been replanted in an effort to keep them from extinction, including one of the world's rarest trees, the "hua Kuahiwi," or Hibiscadelphus giffardianus. Naulu forest containing many species of rare native plants clustered in a small area was very recently destroyed by a lava flow.

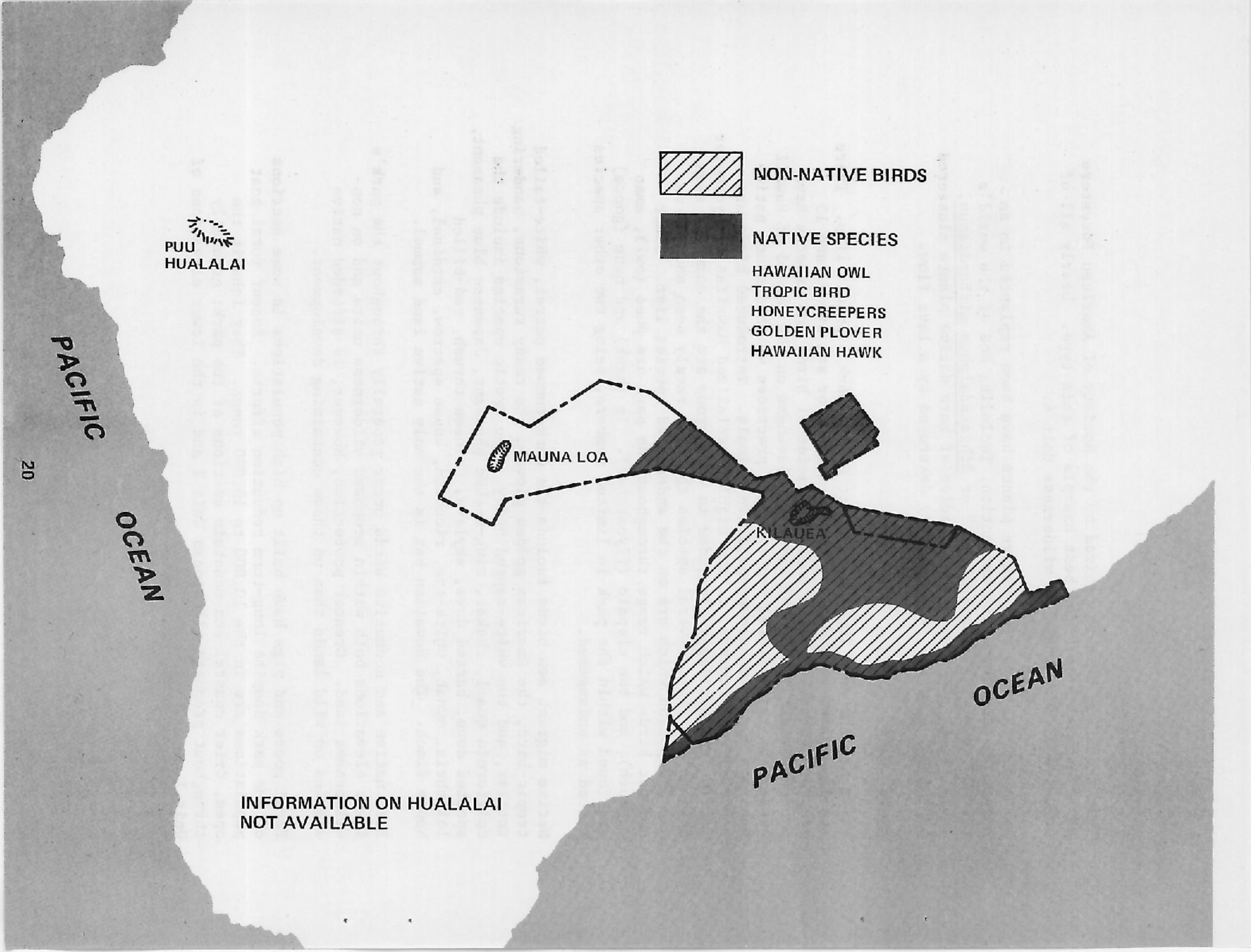
Animal Life

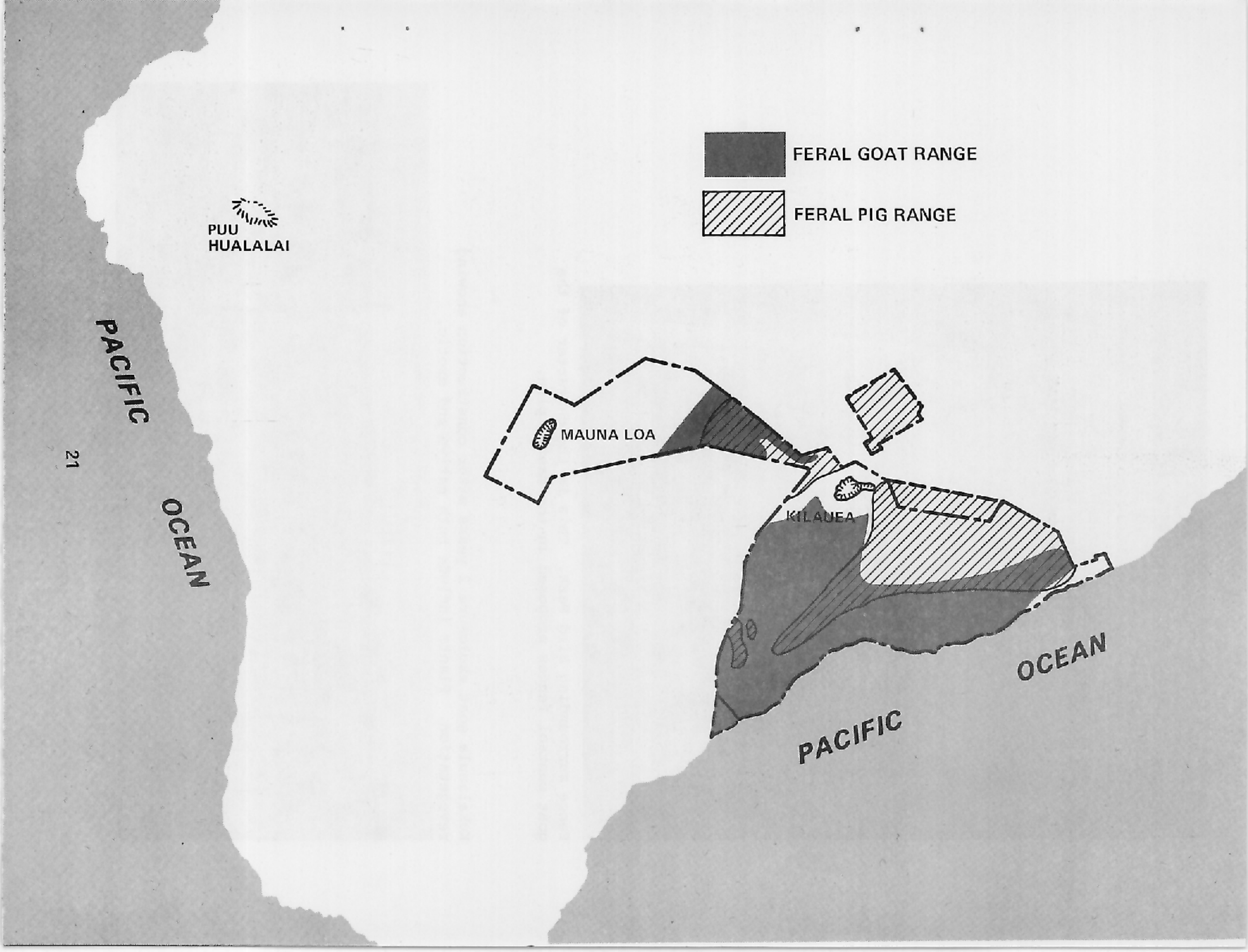
Birds are the most important aspect of the park's animal life. There are 10 species of endemic birds, 6 migrant or sea birds, and 15 exotic species. Several endemic species of birds and insects have become extinct within the park and elsewhere on the Island of Hawaii because of agricultural and forestry practices which disturb native habitats and introduce competitive animals. Introduced birds are especially detrimental to the highly specialized Hawaiian honeycreeper family (Drepaniidae). Included in this group are the commonly seen apapane and iiwi, several species that are rarely seen and the ou and akiapolaau which are on the endangered species list. Other endemic birds which range throughout the park are pueo (owl), amao (thrush), and the elepaio (flycatcher). Io (hawk) and nene (goose) are found within the park in limited numbers, being two other species listed as endangered.

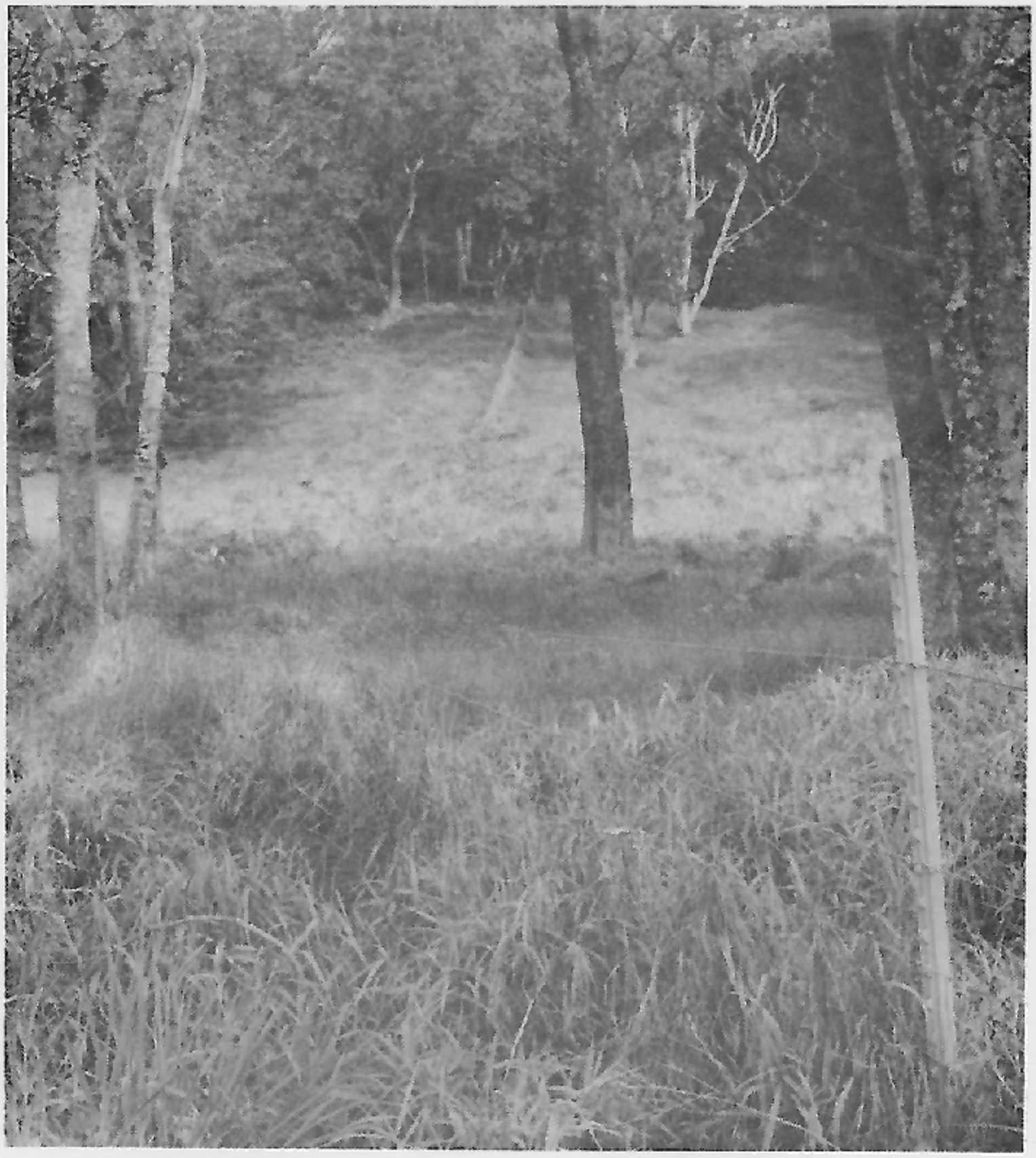
Native migrant sea birds include the dark-rumped petrel, white-tailed tropic-bird, the American golden plover, the ruddy turnstone, wandering tattler, and the white-capped noddy. The exotic species include the California quail, chukar, ring-necked pheasant, Japanese blue pheasant, spotted dove, barred dove, skylark, Chinese thrush, red-billed leiothrix, mynah, white-eye, ricebird, house sparrow, cardinal, and house finch. The Hawaiian bat is the only native land mammal.

Both native and nonnative birds occur generally throughout the park's lower elevations both within proposed wilderness units and on non-wilderness land. Greater protection, however, is afforded native species on wild lands than on those containing development.

Feral goats and pigs have built up high populations in some sections of the park despite long-term reduction efforts. Recent feral goat populations are in the 10,000 to 15,000 range. They inhabit the open, drier coastal and mountain sections of the park; generally throughout proposed wilderness Unit 2 and in the lower elevations of Unit 1.

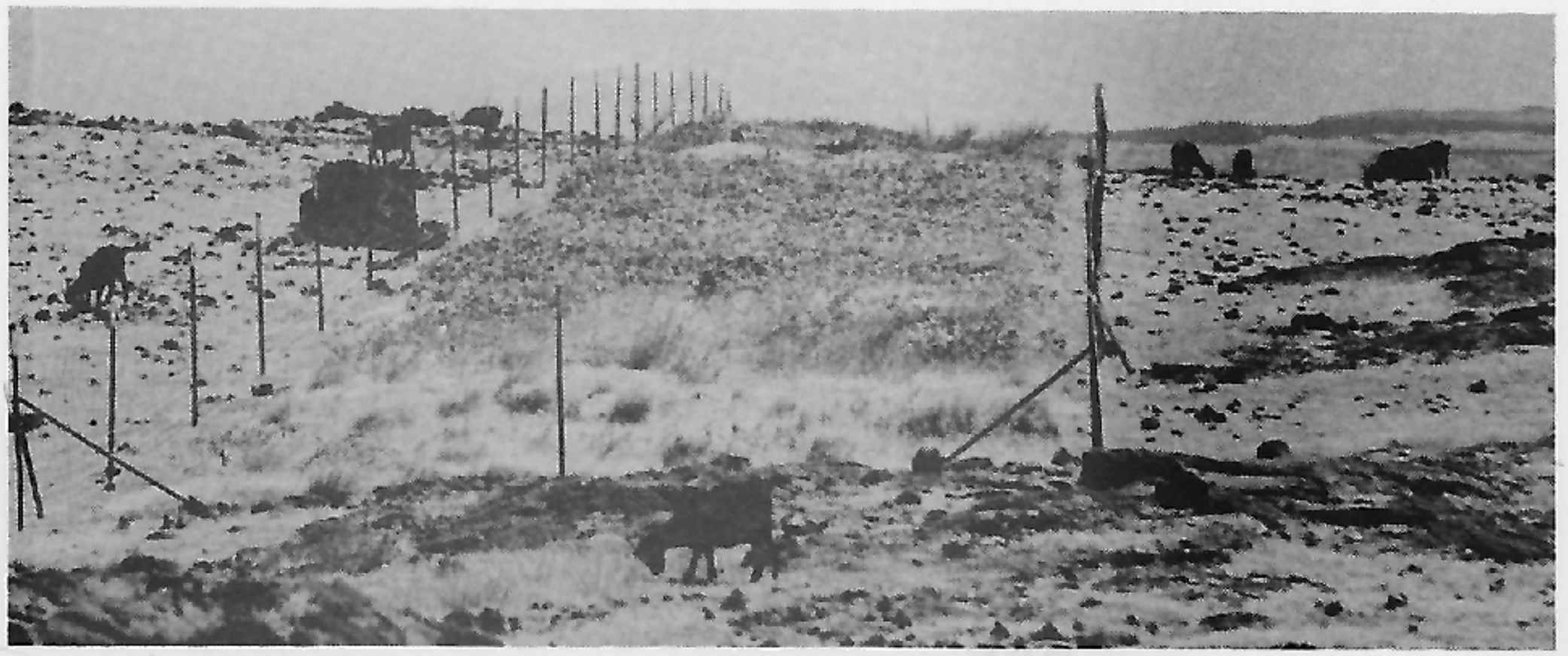

NON-NATIVE BIRDS
NATIVE SPECIES
HAWAIIAN OWL
TROPIC BIRD
HONEYCREEPERS
GOLDEN PLOVER
HAWAIIAN HAWK
PUU
HUALALAI
MAUNA LOA
KILAUEA
PACIFIC
OCEAN
PACIFIC
OCEAN
INFORMATION ON HUALALAI
NOT AVAILABLE


FERAL GOAT RANGE
FERAL PIG RANGE
PUU
HUALALAI
MAUNA LOA
KILAUEA
PACIFIC
OCEAN
PACIFIC
OCEAN



Fence surrounding Bird Park. This is the character of the goat control fences proposed in the master plan.

Kukalauula goat exclosure 2 years after construction showing revegetation. Plants include both native and exotic.



The pig was brought to the Hawaiian Islands by the Polynesians during their early migrations. The Polynesian strains mixed with later European varieties, producing the present-day pig that inhabits the dense rain forests of the park. Pigs can be found within all four proposed units. The resource damage these animals inflict is not completely known, but they do encourage introduction of exotic plant species by rooting in the native plant cover.

To restore and maintain native vegetation, feral animal control is necessary. Control measures, mostly for goats, are particularly important in the lower elevations from the palis to the coast. Control is accomplished by drives, roundups, and direct shooting by special deputized citizens or park personnel. Drift and enclosure fences have been constructed in the lower Mauna Loa Strip and along the Kau Coast. They divide portions of the park into 2,000- to 5,000-acre units and thus assist in more adequately reducing and controlling the goat population. More such fences are planned. In fact, 40 miles of fences will be built and maintained in proposed wilderness Units 1 and 2. Although four-wheel-drive vehicles will no longer be used in these areas, it will be necessary to continue using portable electric drills and other tools for fence construction. Moreover, these and the men who use them will need to be transported into wilderness areas by helicopter.

There are no fish within the park, or within any of the proposed wilderness units. However, colorful fishes are found along the park's 30-mile coastline where there are excellent opportunities to view and study them. Coral reef formations are found only in one small section, less than 1/4 mile of remote coast near Halape, and are not accessible by road. Common reef fishes include the squirrel fish, butterfly fish, Moorish idol, surgeonfish, trigger fish, and several kinds of eel. Opihi, a shellfish found on the surf-washed lava cliffs, is an important local delicacy.

History and Archeology

Land within the national park, especially the coastal region, is rich in remains left by the ancient Hawaiians--heiau ruins, house platforms, stone walls of canoe sheds, pens and corrals, graves, shelter caves, petroglyphs, paved trails and agricultural areas. Many are within easy reach of the former Kalapana - Chain of Craters Road. Others are scattered along that section of coast accessible only by trail and to a lesser extent inland, but almost entirely within proposed wilderness Unit 2 or along the coast within the Kalapana Extension.

The people who lived here were mainly fishermen and farmers, and in the uplands some were bird hunters. Habitation required special adaptation to severe environmental conditions and reveals the versatility

and ingenuity of the Hawaiians. Archeological surveys were undertaken in 1959 when the Bishop Museum, under the direction of Dr. Kenneth P. Emory, made the first extensive field survey. A second survey was made between 1963 and 1965, which continued the assessment of the park's archeological resources and suggested avenues along which more detailed investigations might proceed. These surveys recorded 380 sites. Between 1962 and 1968, several small sites were salvaged as part of the Chain of Craters Road project.

There are within the park a variety of archeological resources, unique in several ways. Furthermore, there is evidence that many aspects of Hawaiian history can best be investigated in this particular complex of sites. Several are deserving of special mention.

Wahaula Heiau--Red Mouth Temple--is reported to have been established and constructed in 1275. Kailiili village, nearby, probably supported the temple. These are the most important archeological sites in the park. The heiau is one of the most significant in the Hawaiian Islands, as it is important in the story of Paao and the introduction of the heiau luakini and the ritual worship of the major gods that characterized Hawaiian ceremonial worship. It is in remarkably fine condition and has an impressive appearance.

Site 911 is a small cave shelter west of Kailiili village near the coast which was used by the ancient Hawaiians as a shelter and an occasional overnight campsite.

Kamoamoa Village site represents an area where two periods of occupation appear to be superimposed. The ancient village appears to be farther back from the shore and the later (historic) development toward the ocean.

The Puu Loa petroglyph field, about 1/2 acre in extent, is the largest concentration of "rock carvings" in the park. It is one of the three largest in the Hawaiian Islands. Many of the petroglyphs are ancient, as they have been almost completely obliterated by successive drawings and erosion. The forms are mainly dots with rings, human figures, sails, and circles with attached lines.

Kealakomo was perhaps the largest village on the Puna Coast in ancient times. It was also the hub of a number of trails: coastal and inland, ancient and post European. Unfortunately this site was covered by fresh lava in 1972.

The aforementioned and numerous additional sites are a rich source of research material dealing with ancient Polynesian culture and the transition to modern times. None are within the proposed wilderness units.

Captain James Cook, R.N., discovered Hawaii for the Western World in 1778 and died at Kealakekua Bay in 1779. His ship navigated offshore from what is now Hawaii Volcanoes National Park, trading with the Hawaiians of Puna and Kau, exchanging nails, beads, and cloth for pigs, fruit, and salt.

The historic events that occurred within the park area after Captain Cook first viewed the Puna-Kau coast are of value chiefly in their association with events that occurred elsewhere, and in the descriptions of the volcano and the coastal Hawaiian habitation recorded in accounts of early travelers. An explosive eruption of Kilauea was a historic factor in the eventual rise of Kamehameha as ruler of all Hawaii. In 1790, while enroute through the Kau Desert to battle the forces of Kamehameha, a portion of Keoua's army was destroyed by the volcano. Fossil footprints of some of the Hawaiian warriors remain today in the Kau Desert. This footprints area is near the northwestern boundary of proposed wilderness Unit 2. Vancouver's naturalist, Archibald Menzies, was the first Westerner to penetrate inland to what is now the park. He ascended Mauna Loa in the winter of 1794, a climb not duplicated until Lt. Charles Wilkes, U.S.N. and aides made the climb again in 1841.

In 1823, a band of Christian missionaries visited Kilauea and wrote such vivid and widely read descriptions that thereafter Kilauea was of prime scientific interest as well as a desired visitor destination. By the 1840's, before Yosemite Valley had even been discovered, Kilauea Volcano had become a regular stop for tourists to Hawaii. They stayed in native-style huts until 1866, when the Volcano House was established on the caldera rim.

The records of Menzies and the Rev. William Ellis in 1823, and the officers of HMS Blonde in 1824 started a long list of amateur and professional observations of Hawaii's volcanoes, which formed the basis of volcanic study which was formalized in 1912 with the founding of the Hawaiian Volcano Observatory.

Hawaiians held the Kilauea summit sacred, and made offerings to the Goddess of Volcanoes--Pele; and it was at Halemaumau, the principal vent of Kilauea, that the image of Pele was weakened in 1824 by Queen Kapiolani, a convert to Christianity, who ate ohelo berries without the traditional offering. Her action did much to shatter the last remnants of belief in the old gods and paved the way for a wider acceptance of Christianity.

Christian missionaries based in Hilo built churches and schools in the mid-1800's along what is now the park's seacoast. Cattle, goat,

pulu (a fern product), and tourist enterprises changed the Hawaiian way of life as well as the structures of the villages. The now abandoned villages represent Western influences grafted onto the traditional Hawaiian culture. Only tourist activity and scientific investigation on Kilauea's rim have survived.

Two relatively recent historic sites have been identified. One is the "Old Volcano House" of 1877, which still stands. The second is the Keauhou Landing Site which for a time in the middle 1800's was a landing for tourists coming to the Kilauea volcano. The landing and village were virtually destroyed by the 1868 tsunami (tidal wave) that destroyed whole villages along the Puna Kau coast. A few coconut trees and remains of the old wharf are all that is left of what was once a fairly large village and steamship port.

A third historic site of some significance, a pulu factory ruin, is located on the trail between Makaopuhi and Napau Craters within proposed wilderness Unit 3.

The National Register of Historic Places has been consulted (Federal Register of February 28, 1973, and supplements through July 30, 1973), and there are no properties on or nominated to the Federal Register in Hawaii Volcanoes at the present time. However, the National Park Service is in the process of evaluating a number of historic sites which may qualify for nomination. The Footprints Area in Unit 2 is the only such site within the wilderness boundaries. In compliance with Executive Order 11593, additional archeological surveys are underway that may result in nomination of archeological sites, also within Unit 2 and in the Kalapana Extension.

THE VISITOR

Park use at Hawaii Volcanoes is year-round and 90% day use. There are very heavy use days during periods of eruption activity but these periodic increases have little or no effect on use of the park's backcountry. Visitation averages about 70,000 a month during the off-season from September to May and about 100,000 a month during the summer. There may be as many as 20,000 visitors a day in the park. Particularly important at Hawaii Volcanoes, however, is the origin of the visitor, and his socioeconomic status. This manifests itself in how the park resources are used, access to the park, and particularly the approach to and interest in the park's backcountry.

Concerning their origin, visitors come from three basic sources: off island visitors (including mainland and foreign), about 50%; local island residents, about 35%; and Kilauea Military Camp (a recreation facility for military personnel within the park boundary), about 15%.

By far, the majority of off-island visitors see the park in organized tours. Kilauea is a major stop on the Hilo-Kona (and reserve) tours. Seven companies serve the park, using 11-passenger limousines and larger conventional buses. They carried almost 400,000 visitors through the park in 1972. In the summer, 1,200 to 1,500 persons tour the park each day with the "off-season" average about 800 to 1,000. These tours are usually in the park between mid-morning and mid-afternoon and almost all make a lunch stop at the Volcano House. Their visit is very structured. It generally involves a brief tour around Kilauea caldera, a stop at the visitor center for information and interpretation, lunch at the Volcano House, and back to the bus to continue the trip to Hilo or Kona. These visitors are little problem to the park manager, have little impact on the major resources, and no measurable effect on the backcountry.

The balance of off-island visitors see the park in rental cars. There are about 500 such cars available on the island, and of these, about 75% are driven to the park.

Local island residents make up a large portion of eruption viewers. They also come to picnic, sightsee, hike, and, to a limited extent, to camp and fish. The farthest islander resides within a 2 1/2-hour drive of the park and more than half the 62,000 residents live within an hour's drive. Their use is almost entirely during the day. The significant fact concerning these visitors is the difference in their attitude about the park. This is a multiracial group consisting of Japanese, Chinese, Philipino, Portugese, Hawaiian, and Caucasian. Traditionally the Hawaiian culture was closely allied to the sea and nearly all activities reflected this alliance. And this has greatly influenced life styles today. Moreover, because it is their home, island residents regard the park land differently from off-island visitors. Many of the leisure time activities involve use of the seacoast for food gathering as well as for strictly recreational pursuits. There are signs of a change, however, and as the economic level rises there appears to be more interest in special recreation activities.

These local residents and the off-island visitors who arrive in rental cars represent almost all the potential backcountry users who may wish to fish, hike or ride in coastal and upland areas or even make the arduous climb to the summit of Mauna Loa. This type of use, too, is increasing. In the 1960's, only about 1,000 to 1,200 persons stayed overnight in the backcountry. In 1972, the number was about 2,500. This increase has occurred despite rough terrain and lack of fresh water. Most use is along the coast below Hilina Pali where there is access to good fishing at areas such as Halape, Apua Point and Kakiwai. There is also some use of the trail to

Mauna Loa's summit where two cabins provide minimum shelter in this cold climate. The master plan proposes to relocate two other shelters in this summit region for a total of four. In the coastal area it is also proposed to build three additional shelters as noted in the proposal section of this statement.

Visitors to the Kilauea military camp on the rim of Kilauea Caldera are often families who tend to remain in and around the major developed areas. This facility does, however, receive the greatest overnight use. The camp provides a complete, week-long vacation program for active and retired members of the Armed Forces and their families, and can accommodate 300 persons. It operates at capacity during the summer season and at about 55% capacity off-season.

For other visitors a choice of overnight facilities is available. The Volcano House has been in operation since 1866. The present structure is a 125-guest-capacity lodge located directly on the Kilauea caldera rim. It operates at more than 75% capacity year-round. Namakani Paio is a 10-unit cabin facility operated by the Volcano House. It was constructed by the National Park Service in 1965 to provide low-cost overnight accommodations. Each unit sleeps four and has an outside picnic table, grill, and lights. There is a central washroom with hot showers. Visitors can bring their own bedding and cooking utensils or rent them from the concessioner.

Campgrounds are also available--three separate units with a total of 22 sites. Use had until recently been relatively light; 1,179 camper days in 1967. The major reason for this light use appears to be the cooler, wet weather at Kilauea's 4,000-foot elevation and the fact that traditional camping use in Hawaii is closely tied to the coast and fishing. The coastal area, however, lacks good potential for uses such as swimming, boating, and fishing. Even so, camping use is on the increase as the island becomes more urbanized and visitors find facilities outside the park more crowded. In 1972, there were 2,500 total camper days.

ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

Hawaii Volcanoes wilderness proposal anticipates reserving about 62% of the park's acreage in an undeveloped state. This action will have considerable impact on all aspects of the park's environment as well as on the manner in which man uses and manages the land. This impact will manifest itself in specific social, biological, and economic effects which will involve both the park and the Island of Hawaii.

These effects fall generally into six categories--impact on research programs (especially those conducted by U.S. Geological Survey), on park management and operation, on the economy of the region, on park use by the bulk of off-island visitors, on use by Big Island residents, and on the survival of specific communities of endemic plants and animals.

RESEARCH PROGRAMS

Perhaps the most significant program is that conducted by the U.S. Geological Survey, and one that predates establishment of the national park. Research facilities are placed in strategic locations throughout the park, as noted on the map, page 5 , of this statement, and are part of the complex monitoring system that assists the extensive program of volcanic research. This involves not only the active craters and their immediate vicinity, but many additional locations within the area proposed for wilderness. This research program will not be curtailed by wilderness designation, but specific controls will be necessary. No ground vehicular access will be allowed, even in the case of new eruptions. The continuing research structures will be inconspicuous, and the more conspicuous instrumentation, used during eruptions, will be removed after the eruption ceases.

The only exception to restricted vehicular use will be the allowance of four-wheel-drive access, for research only, to the summit of Mauna Loa from the north side. This is described as a proposed special provision on page 3 of this statement. Impact resulting from this provision will be the retention of a minor jeep road scar across 3 to 5 miles of barren lava, which is not visible from any major visitor-use area.

Even with the above-mentioned controls, the research facilities are an intrusion into wilderness. Furthermore, they require about 300 trips a year to service and maintain them. Even assuming the use of more sophisticated electronic equipment in the future, many trips will be required to each site for service or replacement every year by foot, horseback or helicopter. However, the main concentration of

TILT STATION, USED BY U.S. GEOLOGICAL SURVEY FOR MEASURING EARTH MOVEMENT RELATED TO VOLCANIC ERUPTIONS. THIS IS TYPICAL OF THOSE LOCATED ON PROPOSED WILDERNESS LANDS. THE INSTRUMENT ITSELF IS BELOW GROUND SURFACE'

ANOTHER TYPE OF FACILITY, A MAGNETOMETER,
LOCATED ABOVE GROUND. THIS TYPE OF FACILITY
IS ALSO LOCATED ON LAND PROPOSED FOR WILDERNESS

facilities will continue in the upper Kau Desert near Kilauea Caldera on non-wilderness land. Generally, the total impact will be most apparent in the added cost of research (probably about 25%), mainly because of the added problems of access.

Research conducted by the National Park Service is predominantly associated with biological and archeological resources. Many important plant communities and bird species are in danger of being damaged by competing exotics or, possibly, of becoming extinct. Continuing research and monitoring is an important element in protecting these communities. Again, research would not be curtailed by wilderness designation but would be more expensive and time consuming. No vehicular access would be allowed, and no permanent research facilities would be permitted. The amount of additional cost incurred will be dependent on the type and scope of the specific project, but it is expected that about 100 trips a year, mainly into wilderness Units 1 and 2, will be required.

In the case of archeological research, the problem is similar but less acute. Many of the known significant archeological sites lie along the coastline within the Kalapana Extension. But the remainder of the park's coastline lies within the proposed wilderness boundary of Unit 2. Any research on wild lands is expensive and difficult. Thus, as a result of wilderness designation, there will be little or no increase in the cost of archeological research.

PARK MANAGEMENT AND OPERATION

The dominant impact will be in the field of exotic plant and animal control. This is a major concern of management at Hawaii Volcanoes where exotics are a constant threat to native populations.

The most active current control operations involve feral goats. Because of the special provisions proposed for the goat fencing program and use of portable drills in the wilderness, control operations will continue after wilderness designation. This will include use of helicopters for goat drives and for fence construction and maintenance. (See the discussion of this proposal on page 23 of this statement.) This involves portions of wilderness Units 1 and 2. The dominant measurable impact will be the increased cost in the program, since motorized vehicles will not be allowed. Other effects will be the audible and visual intrusion caused by the use of helicopters for management and research purposes.

As for future feral animal reduction programs, control of exotic plants, and restoration of native species, the precise impact resulting from wilderness designation is almost impossible to determine. Because adequate

methods have yet to be devised to control mongoose, rats, pigs, or even most exotic plants, it is impossible to determine what effect the non-mechanized equipment requirement of wilderness will have. It is almost certain, however, that any such program will be more expensive. The same holds true for the restoration of native species. Currently the programs of feral animal control require about 1,500 man-days in the backcountry each year.

An important element in management of visitor use in the wilderness will be the use of backcountry shelters, both the 4 existing shelters and 5 proposed for construction. New shelters will disturb a total of not more than 1 to 3 acres. Their major impact will be visual--formal structures along an undeveloped coastline with sparse plant cover. The concentration of use thus stimulated, however, will result in some danger to native biota and to historical or archeological sites. The exact extent of such damage is unknown, but it will manifest itself in trampling of vegetation and "pot-hunting" on historic sites.

ECONOMICS

Designation of this large acreage as wilderness precludes development of campgrounds, picnic areas, or similar facilities. This means that most of the park and its resources are not available for any direct economic investment. This impact is minimized, however, by other factors. The entire Island of Hawaii is a larger identifiable land mass of which the park is only a part. There are many sites, as yet undeveloped, that are more suitable for intensive use by virtue of better access, superlative recreation resources, and better climate. Retention of this large acreage in open space and as wilderness, along with the steadily increasing pressure for backcountry experience by urban dwellers, can result in a distinct economic advantage by rounding out and expanding the type of leisure time activities available.

PARK USE FOR OFF-ISLAND VISITORS

For this group of visitors, mostly part of a tour group, wilderness will have an effect in only two ways. First, the concentration of use in the existing developed areas will continue in the present pattern. The non-development requirement means that no new areas will be opened to the mainstream of park visitation. Thus, use of the land for onsite visits will be limited to those with the time and energy to be independent of motorized access. This is the pattern proposed in the master plan for visiting the park. Second, the great expanses of native environment will continue to be available for the tour visitor to view as he travels the park roads. That these expansive views will continue to be available is assured under wilderness designation; similar landscape types in Hawaii have no such protection.

The park's prime attractions--Kilauea Caldera, the Chain of Craters, and part of the Kalapana Coastline--will continue to be available to the off-island visitor who is unable or unwilling to walk long distances. Thus, those attractions located within wilderness tend to be frequented by the more ambitious visitor willing to spend a greater amount of time in the park.

PARK USE FOR LOCAL RESIDENTS

Even for the Big Island resident and for the minority of off-island visitors, extended hiking and fishing trips will require some sophisticated equipment. Moreover, such persons must be physically fit in order to undertake hiking or riding long distances. Permanent overnight camping or lodging facilities other than primitive shelters will not be allowed. The relatively new lavas in the park have no natural fresh water available. Thus, the type of backcountry use associated with mainland mountain wilderness areas is not feasible in this dry coastal area, thereby necessitating the special provision for rain collection structures. Use of the major park attractions will not be generally affected and local citizens will continue to view and enjoy the volcano godess' frequent fireworks around Kilauea and the Chain of Craters. If, however, eruptions take place on land designated as wilderness, the only access would continue to be by trail, and no new areas would be opened to motorized access.

Fences for control of feral goat populations are noted under the proposal section of this statement as a special provision. These fences will be an esthetic intrusion into the wilderness, particularly for the backcountry user, and visitors may encounter 5 or more during an extended hiking trip. A similar esthetic impact will result from construction of backcountry shelters and rain catchment, as discussed on page 6 of this statement. Finally, there will be a minor impact on food gathering activities by local residents. This involves fishing from the shore and collecting marine life from intertidal zones. Wilderness will retain land in an undeveloped state, which will require walking or riding by those wishing to obtain food in this manner.

ENDEMIC PLANTS AND ANIMALS

Hawaiian endemic populations like those elsewhere have developed independently of man's activities. Indeed, the greatest danger to most Hawaiian plants and animals has in the past been the result of man's agricultural practices; his introduction of goats, pigs and exotic birds; and even the simple act of walking into fragile ecosystems with exotic plant seed adhering to his clothing. The very fact that human use of wilderness land will be stringently controlled will greatly assist in protection of particularly sensitive species.

Native birds are particularly sensitive to human intrusion as are many of the native plants they feed on. The Olaa fern forest exhibits a total ecosystem with little invasion of exotics, but it is a resource that would change drastically if the land were developed and plant cover disturbed. National Park Service policy seeks to protect these fragile resources whether or not wilderness is authorized. Such designation does, however, offer further protection from the possibility of errors in management or change in agency policy.

Constant harvesting of food in the intertidal zones in Hawaii has depleted many items previously plentiful. The opihi, a form of limpet, is typical of such items. Traditionally a great delicacy for Hawaiians and a standard part of lauau fare, this species of shellfish is becoming increasingly scarce. Difficult access through the wilderness and the distance involved in hauling the catch naturally limit the number taken. Thus, wilderness designation will assist in preserving this unique food supply.

MISCELLANEOUS

Section 3 of the park extension act (52 Stat. 7810) approved June 20, 1938, authorized the Secretary of the Interior, under certain conditions, to lease homesites within the Kalapana Extension to native Hawaiians under such rules and regulations as he may deem proper. Such occupancy must not encroach on or prevent free access to any points of historic, scientific, or scenic interest or in any manner obstruct or interfere with protection and preservation of park resources. If such homesites were to be granted by the Secretary, occupants would be required to reside on the land not less than 6 months in any one year to retain the homesite. Such provisions are incompatible with wilderness; therefore, none of the Kalapana Extension Lands are proposed for wilderness designation.

In addition, the same act provides that native Kalapana Hawaiians and visitors under their guidance are reserved the exclusive rights to fishing along that section of the coast within the Kalapana Extension. Establishment of wilderness would have little effect on this provision except that it would continue to assure that much of the coast would be accessible only by trail.

Archeological resources will not be affected by wilderness designation since this action, in itself, entails no construction. But sites on wilderness land will enjoy greater protection simply because they are within lands on which formal development is prohibited. Occasionally, however, new trail or fence construction, increasing visitor use of

the wilderness, and proposed backcountry shelters may be a potential danger to archeological resources, particularly along the coast. Furthermore, although no historic or archeological sites are currently listed on or nominated to the Federal Register of Historic Places, possible nominations may involve sites within the wilderness units. The State Historic Preservation Officer has been contacted. No reply has as yet been received, but any letter of comment will be incorporated in the final statement.

MITIGATING MEASURES INCLUDED IN THE PROPOSED ACTION

Certain measures will be required to prevent damage to or loss of those elements of the wilderness that are particularly sensitive to outside influences. Other measures are designed to facilitate important research projects or control visitor use.

Research projects on wilderness lands must continue to further the general pursuit of knowledge about volcanism and to supply data for resource management programs. U.S. Geological Survey handles the volcano observatory and its associated program, some of which can be adversely affected by wilderness designation, especially where it is necessary to have vehicular access to specific backcountry sites. Where this is especially important, such as the intensive research area in the upper Kau Desert, the land has been excluded from wilderness Unit 2. In Unit 1 there is a special provision for motorized access to the summit of Mauna Loa for U.S. Geological Survey research purposes. For all wilderness units, the proposal includes a special provision to allow continuation of research operations, including placement of new instruments and the use of helicopters, by the U.S. Geological Survey. Control of the goat population will continue under wilderness status, using similar techniques as before--direct shooting by park staff, goat drives, and control by special deputized citizens. Only the continuation and expansion of goat fences, as noted earlier in this statement, is in potential conflict with the inferred intent of wilderness designation. Use of fences is considered very important if not absolutely essential to the success of the control program. Indeed, it is so important, that the proposal includes a special provision to mitigate the possible effect of wilderness on the goat control program, a provision to allow continuation and expansion of fences in Units 1 and 2 as proposed in the master plan and the resources management plan. The impact of goat fences on the environment will be discussed in the environmental statements supporting those plans.

Public use of Hawaii Volcanoes backcountry will necessitate provision of certain amenities not generally permitted within wilderness. Developed water supply is particularly important since no natural surface water is available in the park. To provide this service, tanks to store rain collected from trail shelter roofs are proposed in Units 1 and 2. In Hawaii, almost everyone camps near the coast and is prepared only for the warm balmy nights at that elevation. The freezing temperatures experienced on the upper slopes of Mauna Loa are simply not part of the image of a tropical isle. Thus continued use of the existing shelters is particularly important as a means of mitigating the impact of wilderness designation on visitor use in high-elevation areas. On

the coast, the main purpose of the shelter roofs is to provide fresh water, since none is available naturally. These shelters and water storage tanks are included in the proposal as a special provision of the wilderness legislation. Throughout the proposed wilderness, sensitive location of trails and shelters will be an important method of mitigating their esthetic impact. This can be done primarily by avoiding prominent sites seen from long distances and planning a low profile design for structures. Identification of important historic and archeological sites will also affect trail and shelter location.

Specific sections of the proposed wilderness boundaries are located to mitigate potential impact from wilderness designation. Exclusion of intensive research areas has been discussed previously. The entire Kalapana Extension has been excluded to mitigate any possible social and cultural impact on native Hawaiians that would result from extinguishing any opportunities for homesites.

Some major sections of land where eruptions could take place have been included in wilderness. Along the Chain of Craters, however, sections where eruptions are most likely to occur have been excluded from wilderness. This will help mitigate the severe limitation on visitor use when major eruptions occur on wilderness land.

Information will be provided to the backcountry visitor concerning available facilities such as campsites, trails, and shelters. He will be alerted to those features unique to the Hawaii wilderness--dangers in coastal areas and around volcanic features, scarcity of water, and endangered species of plants and animals. Much of this can be accomplished through signing and interpretive programs. This will provide considerable assistance in managing and utilizing the resource, and will ultimately improve the quality of the environment and of the individual visitor's experience.

Studies will be initiated to determine the carrying capacity, or the optimum number of persons that can use the wilderness during a specified period of time. Two predominant issues are involved: the quality of the visitor's experience and preservation of the physical wilderness environment. Such capacities can be an excellent basis for developing management policies. Closely allied with this is waste collection and disposal. This is not a serious problem as yet in Hawaii since backcountry travel is light. But as use increases it will be necessary to remove wastes from the wilderness, design disposal means to meet environmental standards, or limit use to the point where the amount of waste generated will not affect the resource.

It is expected that total park visitation will continue to increase, placing more pressure on all park resources. To assist in protection

of wilderness land, complementary facilities will be developed both inside and outside the park on non-wilderness land to provide information and access points for backcountry trips. Such facilities include hotels, restaurants, shops, interpretive devices, and information centers. Furthermore, major viewpoints along the Chain of Craters Road and other park roads allow visitors to view and enjoy wilderness with no impact on the resource itself.

Finally, to help mitigate any potential danger to archeological and historic resources resulting from backcountry use or construction of fences or shelters, the requirements of Executive Order 11593 will be observed. A professional survey will be made to determine the extent and significance of any cultural remains present. If necessary, locations of trails, fences, and shelters can be moved to avoid historical or archeological sites, or any properties that shall be nominated to the Federal Register.

ADVERSE IMPACTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

Wilderness designation will result in some adverse impact. Since the action is essentially non-development, resulting physical changes in the environment are negligible or non-existent. There are, however, some adverse social and biological effects that will result.

Use of the wilderness for onsite activities will generally be limited to those physically fit to hike long distances or who have the funds to hire horses and/or pack animals. And that large segment of the public who are dependent on mechanical or motorized travel will be excluded, although to some extent this is by choice.

The water storage tanks and backcountry shelters will be esthetic intrusions in the officially delineated wilderness. Further, since use will be more concentrated in these areas, there will always be some danger to nearby native vegetation and historical or archeological sites.

The U.S. Geological Survey's research facilities are small and, in themselves, offer little threat to park resources. Even so they will continue to be intrusions into wilderness and will require trips into wilderness for service or replacement. The same pattern will follow for management and research operation by the National Park Service. Furthermore, should volcanic eruptions occur on wilderness lands, even more research and operational traffic will be necessary to and from these sites, wherever they may be.

The program of feral animal control, mainly goats and pigs, will continue to require foot and horse travel both on trails and cross country. The impact of management travel in the wilderness will manifest itself in trampling of vegetation and the continuing danger of introduction of exotic species in this sensitive environment.

Drift fences as well as the use of helicopters will also continue as intrusions into the wilderness for visitors, since only part of this impact can be mitigated by sensitive location of trails and shelters.

There will also be an unavoidable increase in the cost of management and research programs for both the National Park Service and the U.S. Geological Survey. This increase will stem predominantly from the requirement that no vehicular access be allowed.

Hawaii Volcanoes perhaps more than any mainland park is sensitive to man's travel, even to the occasional visitor who hikes along the trails. This is particularly evident in insular plant and animal communities such as the Olaa fern forest and the small isolated kipukas. That any human use can cause damage is clear and is evidenced by the steadily diminishing number and extent of native Hawaiian species.

Even with sensitive resources taken into consideration, Hawaii Volcanoes backcountry is capable of handling a considerable increase in visitation. At some time in the future, however, a capacity will be reached and the number of visitors to specific areas controlled. At that time, pressures on adjacent non-wilderness lands will also be greater, and unless there is a specific capacity enforced for use of those lands, there will be danger of increased resource damage.

THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The major benefits of a Hawaii Volcanoes wilderness are educational, scientific, and inspirational. Many of these benefits will increase in value as the State continues to become more urbanized, thereby, diminishing similar areas elsewhere. This is particularly significant in this unique island chain with its numerous plant and animal communities that exist nowhere else. Geologic values involving an almost perpetually active volcano have their own unique and singularly effective way of protecting themselves from man's instrusive practices.

As is the case with many mainland wilderness areas, continuous inappropriate or excessive use can result in the loss of that quality of human experience uniquely afforded by the wilderness, and this occurs perhaps even more quickly than the deterioration of the wilderness resource itself. In the long run, the benefits associated with maintaining this large acreage as open space can be expected to have a positive effect on the island's economy, including expanded resort industries.

Additionally, the research benefits available in the park are especially significant. Studies involving geology, archeology, evolution of plant species, and the survival of insular populations in an environment little changed by modern man will provide increasing benefits seemingly far removed from Hawaii Volcanoes National Park and the entire State, but vital to man's use of all the earth's resources. The continuing pursuit of this knowledge entails some short-term uses that conflict with wilderness--extensive research facilities, fences for control of goats, and added travel by management and research personnel. But the long-term results of the data thus obtained far outweighs the esthetic impact and will help insure the continued existence of many of the park's fragile resources as well as further the knowledge of volcanic processes in Hawaii and elsewhere.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION

In accordance with the wilderness proposal and the resulting management practices, there are few irrevocable uses of resources. And rather than allowing consumptive uses, the wilderness will, in fact, insure resource preservation. Wilderness severely inhibits development and no change in the wilderness line can be accomplished without Congressional approval. This, in a sense, is a commitment of resources in that economic benefits derived from development are unavailable. But there are few, if any, inherent resources suitable for commercial development. The volcanic formations contain no mineral value, and there is no merchantable timber except a few acres of Koa forest in the lower part of proposed Unit 1. The tree ferns, especially in Olaa fern forest could be carved into kihis (traditional Hawaiian image) or harvested for hapuu (a medium for orchid growing). Tree ferns, however, are available elsewhere and grow over much of windward Hawaii.

Nearly all coastal lands in the State of Hawaii have some potential for resort development. Only one small beach (Halape) exists along the park's entire windswept coast. When compared with the ideal climate and gentler coastline of Kona and other islands, retaining this section of coast as wilderness appears even more appropriate.

The wilderness line as proposed, including the special provisions, avoids a commitment of resources that would preclude the continued pursuit of geological and biological knowledge. Although the proposal will encourage visitor use of the wild lands through a special provision to provide minimum comfort, the essence of wilderness will be preserved.

ALTERNATIVES TO THE PROPOSED ACTION

During the wilderness study, several alternatives to the proposed wilderness line were considered. Except for the alternative of no wilderness, they apply to specific portions of the park's roadless area that were considered as a deletion or addition to the wilderness as now proposed. Each is discussed below as a separate alternative.

ALTERNATIVE A--No Wilderness Designation

Management of most of Hawaii Volcanoes backcountry would be essentially the same, regardless of whether or not wilderness designation becomes a fact. The impact resulting from non-wilderness status, however, is considerable in regard to research and management programs and certain developments for public use.

Research, especially those programs accomplished by U.S. Geological Survey, would be easier and less expensive. Eruptions occurring anywhere within the park could generally be reached by a four-wheel-drive vehicle carrying all necessary equipment. New research facilities could more easily be constructed in these or other locations if necessary.

Management programs, particularly goat control, would also be less expensive. Four-wheel-drive vehicles could be used for construction and maintenance of fences.

New eruptions are always a primary source of interest to all park visitors. As long as such activity occurs on non-wilderness land, it can be made available by mechanical means. This applies to the visitor and management alike. Except for emergencies, mechanical transportation would not be permitted should a new eruption occur in an area designated as wilderness. Moreover, non-wilderness would allow roads covered by fresh lava flows to be rebuilt on any alignment deemed appropriate for access and public use.

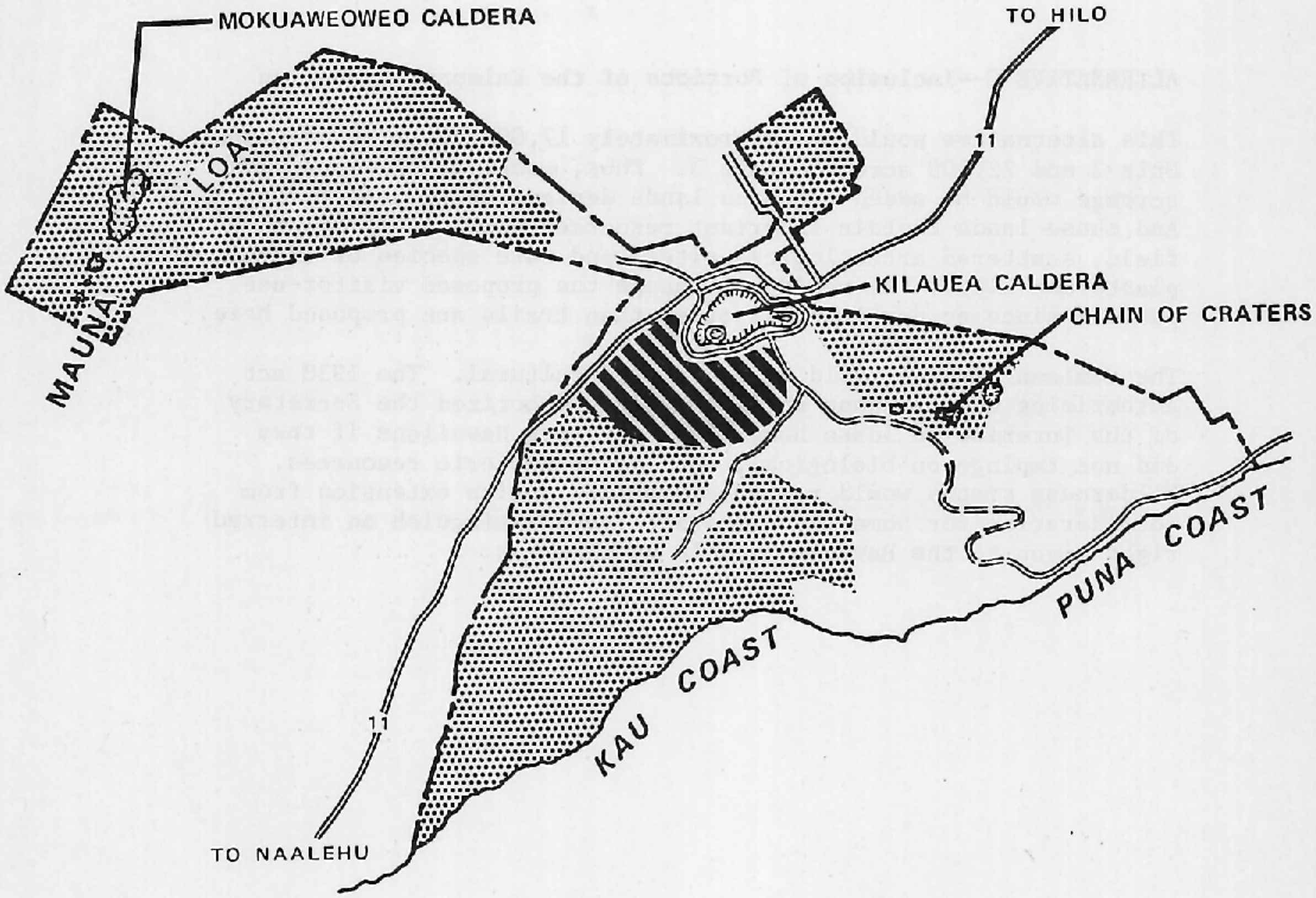
Recreational use of the park's vast coastal resources would continue to be limited to hiking, fishing, and camping. Non-wilderness would, however, allow greater freedom for construction of new backcountry facilities such as camp shelters and water supply systems, thus making it more convenient for visitors and increasing capacities. Such development would also increase the danger of damage to native biological communities. This would be especially apparent in those species sensitive to man-induced influences.

The Olaa fern forest would be little affected by non-wilderness status since the National Park Service would continue to protect this important

resource, and the master plan proposes it as a research natural area. Eventual wilderness status would, however, place a more effective guarantee on non-developed status unless Congress were to rescind its previous action.

ALTERNATIVE B--Inclusion of Concentrated Research Area in Upper Kau Desert

Research in the vicinity is closely associated with Halemaumau Firepit and the volcano observatory, the most concentrated research area in the park. Access has traditionally been by four-wheel-drive vehicle and the program is proposed by U.S. Geological Survey to continue. There are about 20 sites that are visited on an average of 5 times per month. Installations include geodimeters, tilt stations, and seismometers. Wilderness status for this area would add a maximum of 10,000 acres. No visitor facilities are planned here, even though the southwest rift sustains frequent volcanic activity. Most research would not be prohibited, but would be much more expensive, due to required access by horseback or trail. Geodimeter transects, however, would be effectively prohibited because they would require a fleet of helicopters.

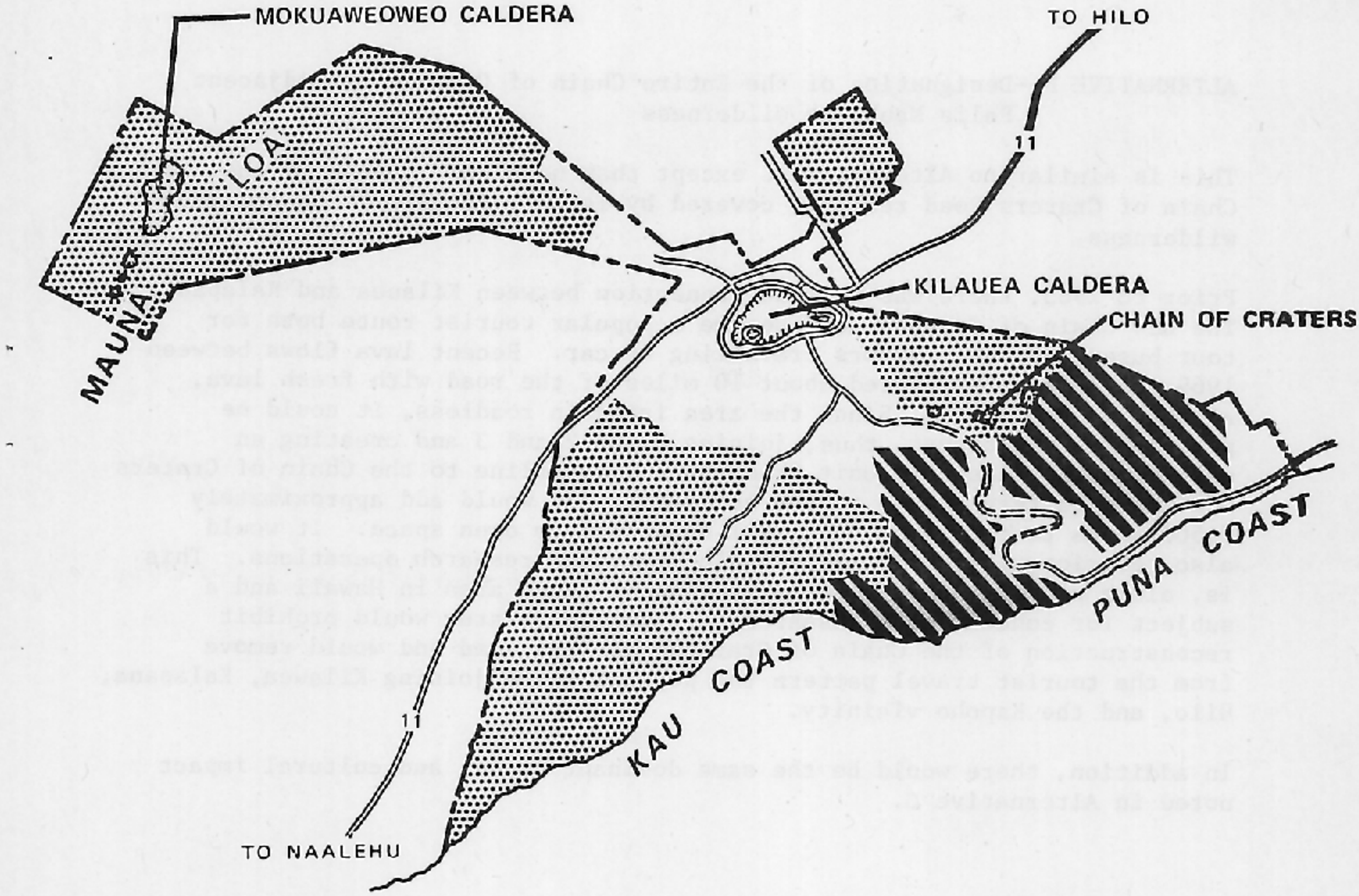


ALTERNATIVE B

ALTERNATIVE C--Inclusion of Portions of the Kalapana Extension

This alternative would add approximately 17,000 acres to proposed Unit 2 and 22,000 acres to Unit 3. Thus, considerably more park acreage would be added to those lands designated as wilderness. And these lands contain important resources--Puuloa petroglyph field, scattered archeological sites, and rare species of endemic plants and birds. It would not change the proposed visitor-use pattern since no developments other than trails are proposed here.

The dominant impact would be social and cultural. The 1938 act authorizing the Kalapana Extension also authorized the Secretary of the Interior to lease homesites to native Hawaiians if they did not impinge on biological, scenic, or historic resources. Wilderness status would remove almost the entire extension from consideration for homesite use and thereby extinguish an inferred right given to the Hawaiian people by Congress.



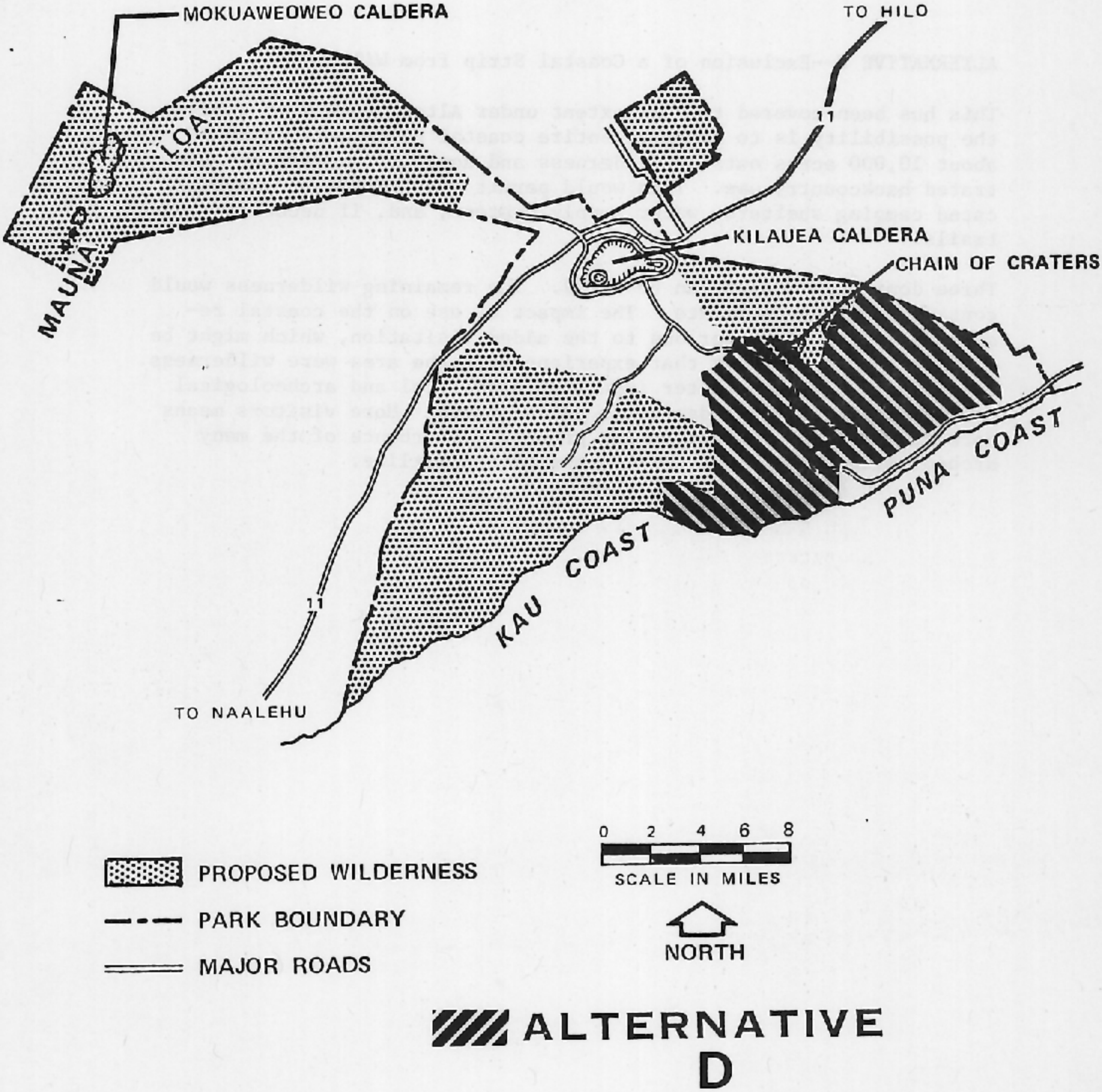
ALTERNATIVE C

ALTERNATIVE D--Designation of the Entire Chain of Craters and Adjacent Palis Mauka as Wilderness

This is similar to Alternative C except that here the section of the Chain of Craters Road recently covered by lava would also be designated wilderness.

Prior to 1965, there was no road connection between Kilauea and Kalapana. The new Chain of Craters Road became a popular tourist route both for tour buses and for visitors travelling by car. Recent lava flows between 1969 and 1973 have covered about 10 miles of the road with fresh lava, closing it to travel. Since the area is again roadless, it could be proposed as wilderness, thus, joining Units 2 and 3 and creating an uninterupted wilderness unit from the Kau coastline to the Chain of Craters and the Ohia/fern forest to the northeast. It would add approximately 7,500 acres to that area in Hawaii dedicated to open space. It would also restrict visitor access, development, and research operations. This is, along with Kilauea, the most active volcanic area in Hawaii and a subject for concentrated research. Wilderness status would prohibit reconstruction of the Chain of Craters/Kalapana road and would remove from the tourist travel pattern the popular route joining Kilauea, Kalapana, Hilo, and the Kapoho vicinity.

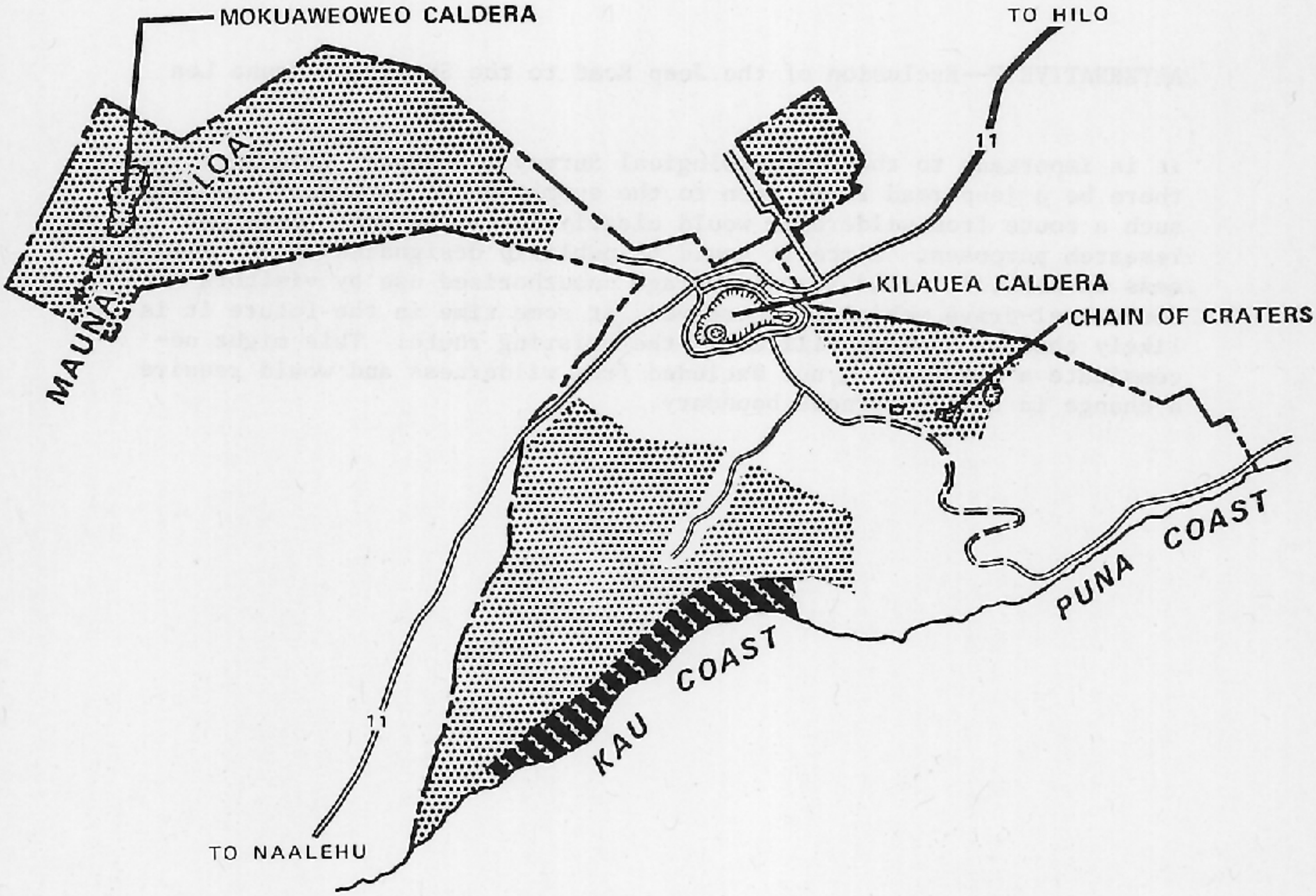
In addition, there would be the same dominant social and cultural impact noted in Alternative C.


MOKUAWEOWEO CALDERA
TO HILO
11
MAUNA LOA
KILAUEA CALDERA
CHAIN OF CRATERS
PUNA COAST
KAU COAST
11
TO NAALEHU
0 2 4 6 8
SCALE IN MILES
NORTH
PROPOSED WILDERNESS
PARK BOUNDARY
MAJOR ROADS
ALTERNATIVE D

ALTERNATIVE E--Exclusion of a Coastal Strip from Wilderness

This has been covered to some extent under Alternative A, but here the possibility is to leave an entire coastal strip consisting of about 10,000 acres outside wilderness and zone it for more concentrated backcountry use. This would permit construction of sophisticated camping shelters, water supply systems, and, if necessary, paved trails.

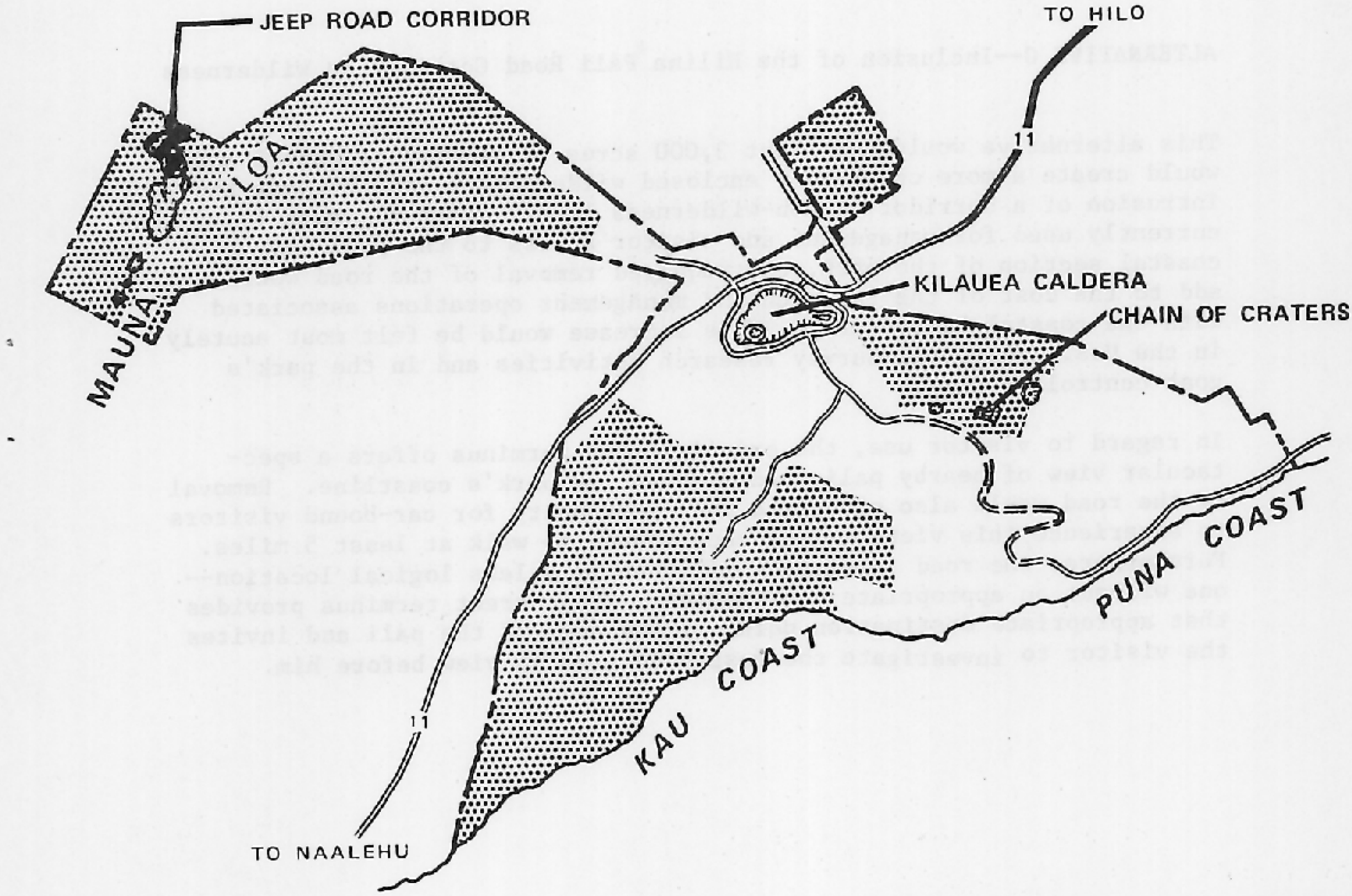
Three dominant impacts can be cited. The remaining wilderness would contain fewer developments. The impact of use on the coastal resources would be greater due to the added visitation, which might be doubled or tripled over that experienced if the area were wilderness. There would also be greater impact on historical and archeological resources, and greater danger to native biota. More visitors means more trampling of vegetation and greater disturbance of the many archeological sites that exist along this coastline.



ALTERNATIVE E

ALTERNATIVE F--Exclusion of the Jeep Road to the Summit of Mauna Loa

It is important to the U.S. Geological Survey's research program that there be a jeep road route open to the summit of Mauna Loa. Excluding such a route from wilderness would clearly leave the route open for research purposes. Since it would be publicly designated as non-wilderness on maps, it would also encourage unauthorized use by visitors with four-wheel-drive vehicles. Moreover, at some time in the future it is likely that lava flows will cover the existing route. This might necessitate a new routing not excluded from wilderness and would require a change in the wilderness boundary.

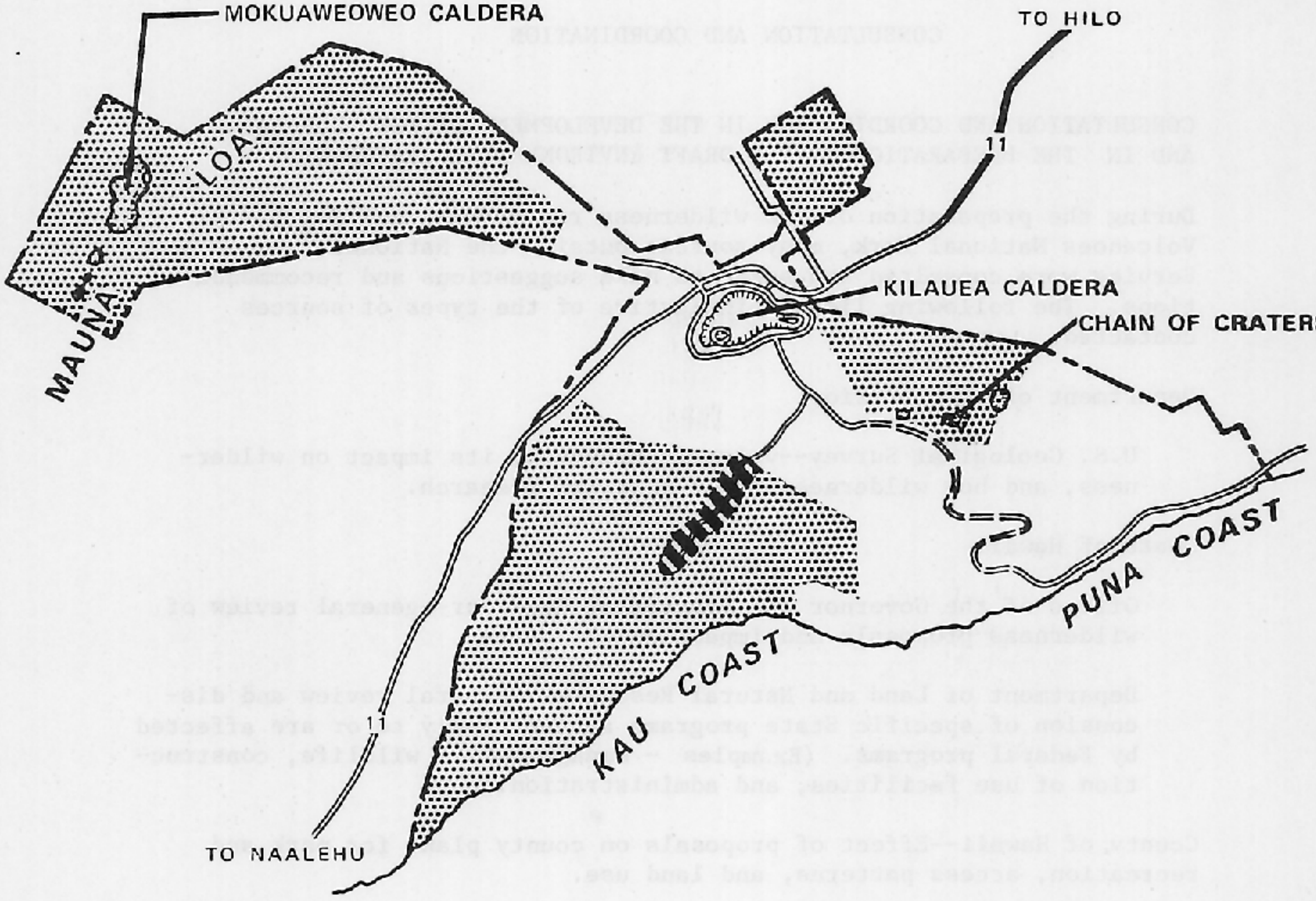


ALTERNATIVE F

ALTERNATIVE G--Inclusion of the Hilina Pali Road Corridor in Wilderness

This alternative would add about 3,000 acres to wilderness Unit 2 and would create a more completely enclosed wilderness parcel without the intrusion of a corridor of non-wilderness land. Since the road is currently used for management and visitor access to the pali and coastal section of the park, the required removal of the road would add to the cost of the research and management operations associated with the coastal backcountry. This increase would be felt most acutely in the U.S. Geological Survey research activities and in the park's goat control program.

In regard to visitor use, the existing road terminus offers a spectacular view of nearby palis and much of the park's coastline. Removal of the road would also eliminate the opportunity for car-bound visitors to experience this view, unless they wished to walk at least 5 miles. Furthermore, the road terminus would then be a less logical location--one without an appropriate destination. The current terminus provides that appropriate destination point at the edge of the pali and invites the visitor to investigate the vast wild area in view before him.



ALTERNATIVE G

CONSULTATION AND COORDINATION

CONSULTATION AND COORDINATION IN THE DEVELOPMENT OF THE PROPOSAL AND IN THE PREPARATION OF THE DRAFT ENVIRONMENTAL STATEMENT

During the preparation of the wilderness recommendations for Hawaii Volcanoes National Park, many sources outside the National Park Service were consulted and asked to make suggestions and recommendations. The following list is indicative of the types of sources contacted.

Department of the Interior

U.S. Geological Survey--volcanic research, its impact on wilderness, and how wilderness might restrict research.

State of Hawaii

Office of the Governor and Lieutenant Governor--general review of wilderness proposals and impact on the State.

Department of Land and Natural Resources--general review and discussion of specific State programs as they apply to or are affected by Federal programs. (Examples - management of wildlife, construction of use facilities, and administration.)

County of Hawaii--Effect of proposals on county plans for park and recreation, access patterns, and land use.

University of Hawaii--Student participation in obtaining detailed data on possible impact resulting from wilderness proposals.

Bishop Museum--Use of previous studies on archeological resources.

COORDINATION IN THE REVIEW OF THE DRAFT ENVIRONMENTAL STATEMENT

Copies of the draft environmental impact statement and a request for comments will be sent to the following Federal and State agencies and private organizations:

Advisory Council on Historic Preservation
Department of Agriculture
  Soil Conservation Service
Department of Defense
  U.S. Army
Department of the Interior
  Bureau of Indian Affairs

Bureau of Mines
Bureau of Land Management
Bureau of Outdoor Recreation
Bureau of Reclamation
Bureau of Sport Fisheries & Wildlife
Geological Survey
Department of Transportation
Environmental Protection Agency
State of Hawaii Clearinghouse
State Historic Preservation Officer
Metropolitan Clearinghouse
Audubon Society
Bishop Museum
Congress of the Hawaiian People
Life of the Land
Sierra Club
Society of American Foresters
The Hawaiians
The Nature Conservancy
University of Hawaii
Wilderness Society

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